PULP & PAPER

JUNE 1960

New California Mill
page 57

ClO_2 "Puffless" Wonder
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Updated Mergers List
page 74

LAKE MICHIGAN MILL GOES CONTINUOUS . . .

Refining and stock metering converted in single move

See page 68

BOLTON *Microlyzed* JORDAN FILLINGS ARE

FIRST IN SALES!

BECAUSE BOLTON WAS —

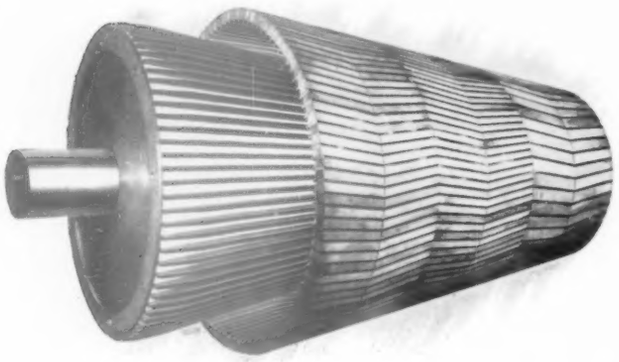
FIRST to develop special metals for fillings
FIRST to install complete in-plant heat treating facilities
FIRST to install instrument controlled wood drying kilns
FIRST to install dynamic balancing of filled plugs as standard procedure
FIRST to install and use electronic equipment to inspect knives
FIRST to hardness test each bar in every filling
FIRST to import and use Bethabara for wood separators
FIRST to introduce Microlyzed custom processing

There is no substitute for experience

It takes more than metal and wood to make a Jordan filling. The kind of metal selected and the way it is processed make a world of difference. The same is true of wood separators and the assembly of the knives and woods.

What matters most is *performance*. That is why Bolton Microlyzed Fillings should always be your first choice. It is with most papermakers.

With Microlyzed fillings you can rely on uniform, effective stock treatment every time. You will find them equal to any refining requirements with more to spare. Microlyzed fillings give long periods of even, uniform wear from every knife in the set, with the proper balance of wear resistance and toughness. Wear between plug and shell knives can be equally balanced.



There is no substitute for Quality

It takes a variety of specialized, highly developed skills to make fillings that out-perform all others. For instance, the photomicrostructural analysis of all raw stock and destructive mechanical properties testing determine exact heat treating requirements. Quality control serves as a double check in meeting established standards through every step of custom processing. Finally, non-destructive tests guarantee that these high standards of quality are present in every set of fillings before shipping — palletized, or in reinforced, sealed, corrugated cartons.

Bolton Microlyzed Fillings are available for every size and make of Jordan currently in use. Included are Wedgeless, Ring Type, Hydro-truss, Hydroflex, Boltobar and others of special design. Our Technical Advisory Service will gladly help you select fillings for your particular requirements.

Microlyzed fillings are unequalled for balanced refining, economy of long life, uniformity, strength, wear resistance and the ease of stripping and refilling — more reason why Microlyzed fillings are *first in sales*.

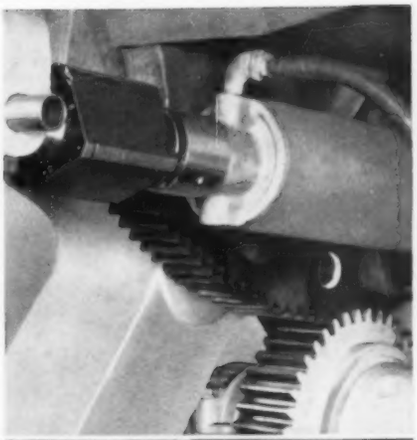
Next time specify Microlyzed Fillings by Bolton — the world's largest fillings manufacturer.

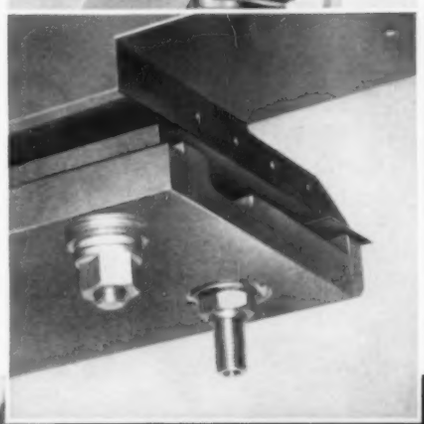
BOLTON EMERSON
TRADE MARK

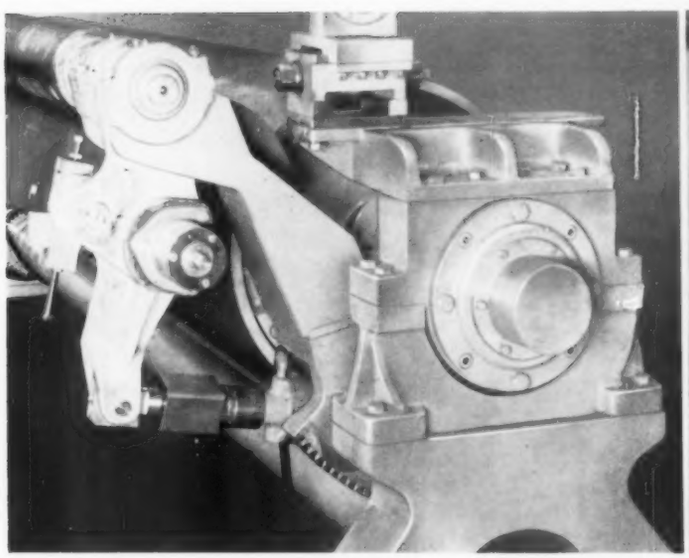
John W. Bolton & Sons, Inc. and The Emerson Manufacturing Company, Division
Lawrence, Massachusetts

Only the **NEW** Rice Barton Trailing Blade Coater gives you **ALL** these advantages!

- Less blade wear-in time
- Less paper waste
- Accommodates different thickness blades
- Instantaneous blade and holder removal
- Blade adjustable by micrometer
- Coat weight control while running
- Positive head positioning
- Easier cleaning of all coating surfaces
- Faster speeds
- Less floor space
- More rugged construction







Completely redesigned for greater versatility and ruggedness, the changes are major improvements not just modifications of the original. Rice Barton engineers have combined the best features of everything learned from extensive research, continuous development and more experience than any other manufacturer.

PROGRESS IS MEASURED IN RESULTS—NOT CLAIMS. Rice Barton's results are over 60 commercial installations!

Write for Descriptive Folder.

Rice Barton CORPORATION • WORCESTER, MASS.

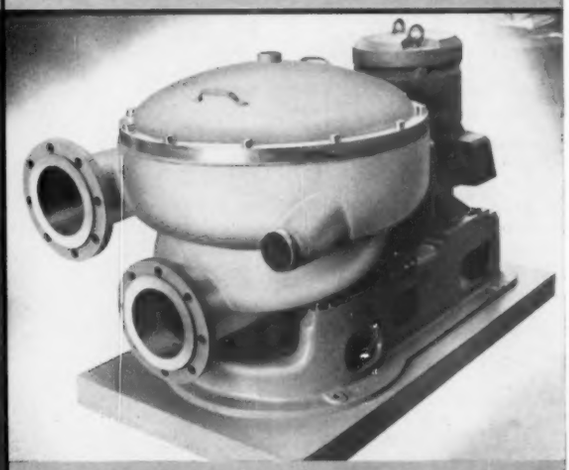
FOURDRINIERS, PRESS SECTIONS, DRYER SECTIONS, CALENDERS AND SUPERCALENDERS, REELS, WINDERS, HEAD BOXES, SIZE PRESSES, BREAKER STACKS, DIFFERENTIAL DRAW CONTROL DRIVES AND CONE PULLEY DRIVES, PULPING EQUIPMENT, HIGH VELOCITY AIR DRYERS, TRAILING BLADE COATERS, FIBRE-FLASH DRYING SYSTEMS

NOW, 3 Sizes of BIRD CENTRISCREENS

— one of which will do a better screening job on *your* stock and *your* tonnage at *lower screening* cost per ton

The **Model 14** Centriscreen is the pressure screen that has proved so popular, effective and economical ahead of big, high speed paper machines handling all kinds of stock. It handles feeds up to 5600 gpm or more, depending on stock character and consistency.

The Model 10 Centriscreen is the pressure screen for handling approximately half the volume of the Model 14 — sometimes more on certain kinds and grades.



The new **Model 6** Centriscreen is the pressure screen for small Fourdriniers and for one screen per mold on cylinder machines. Only 30 inches high and 34 inches wide it delivers up to 1200 gpm. It possesses the superb dirt and shive removal efficiency and exceptional operating and maintenance economy of the larger models.

BIRD MACHINE COMPANY

SOUTH WALPOLE, MASS.

REGIONAL OFFICES: EVANSTON, ILLINOIS
PORTLAND, OREGON • ATLANTA 9, GEORGIA

Canadian Manufacturers of Bird Machinery
CANADIAN INGERSOLL-RAND COMPANY, Limited, Montreal

PULP & PAPER

Reader's Guided Tour

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NUMBER 6

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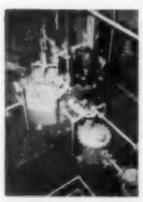

Glassed-steel tanks and process vessels are among key features of Gaspesia Sulphite Pulp Co's new chlorine dioxide generating plant. Extensive research, engineering and operation experience helped put this plant on stream without any start-up troubles.

68 Stock Preparation Automated

Bleach plant (l) and new refiner structure (r) of S. D. Warren mill in Muskegon, Mich.

S. D. Warren Co's Muskegon mill now boasts increased production and efficiency through installation of modern refining and stock metering systems. Based on successful installation at "sister" S. D. Warren mill at Cumberland Mills, Me., big feature is continuous operation.

74 Updating the Merger Picture

Management Consultant Edward McSweeney tells what is behind the industry's urge to merge. In addition, spurred by many requests for a current merger list, an updated listing of acquisitions and affiliations in the pulp and paper field is presented.

94 Report on a Growth Regulator

Gibberellic (soft "g") acid is a growth stimulant which made headlines several years ago with promises of easing the then newsprint shortage by its ability to stimulate tree growth. Here is an interesting factual report on what it can and cannot do.

CIRCULATION DEPT., 500 Howard St., San Francisco 5, Calif. C. C. Baake, Circ. Mgr. Send subscription orders and changes of address to PULP & PAPER, above address. Include both old and new addresses.

RATES (including World Review Number): U.S. and Canada—1 yr., $5; 2 yrs., $8; 3 yrs., $10. Other countries—1 yr., $7; 2 yrs., $12; 3 yrs., $16. Orders for payment in British Commonwealth or European funds may be sent to: Harold P. deLooze Ltd., 7 St. James Square, Manchester 2, England.

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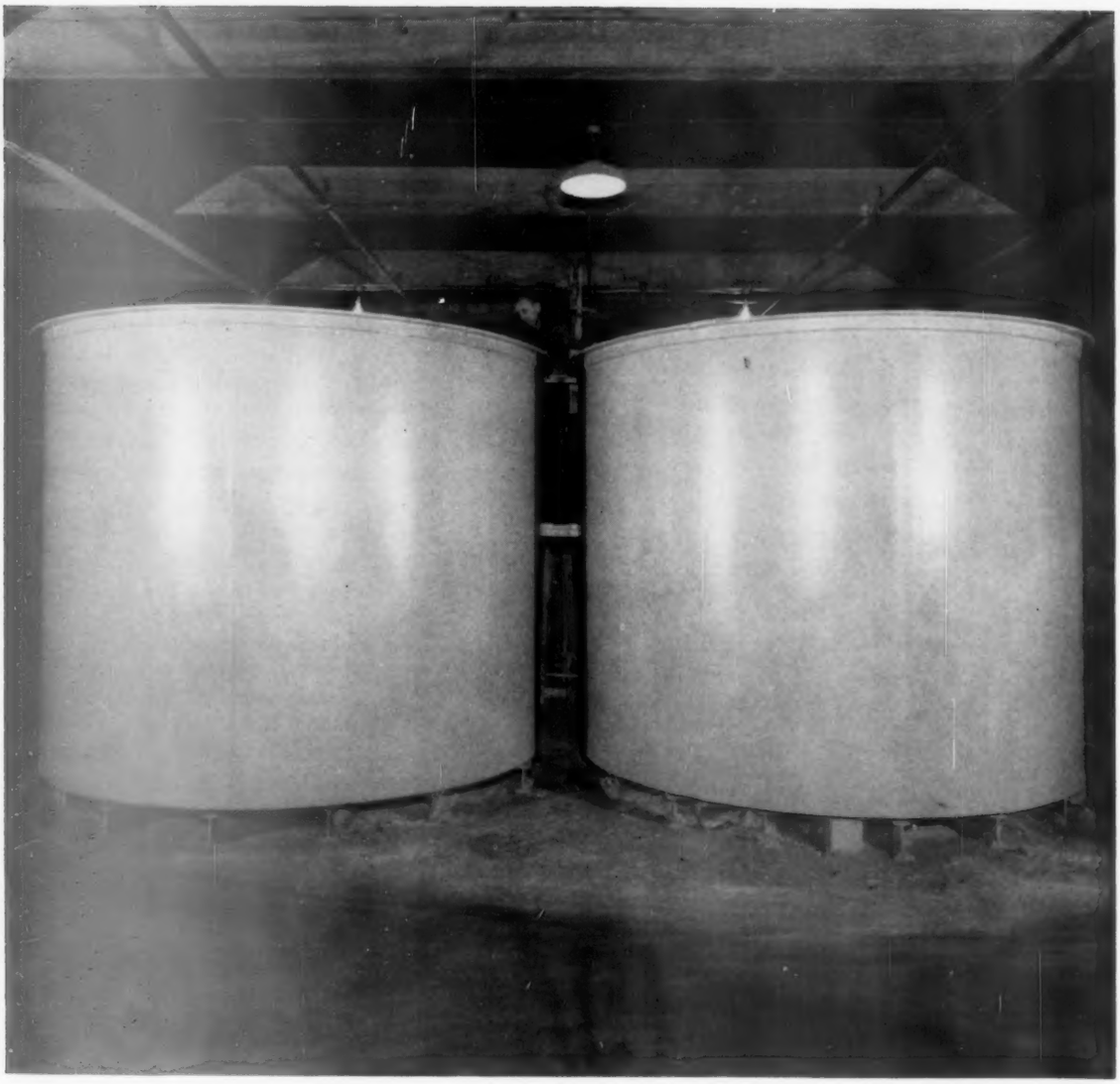

Alum tanks lined by B.F.Goodrich need no repairs in 20 years

THIS paper manufacturer wanted to cut costs by switching from powdered to liquid alum in their pulp mixture. But getting a tank to hold this corrosive solution was a problem. Wood tanks shrink, often leak. Lead-lined tanks require frequent repairs.

B.F.Goodrich engineers recommended Triflex rubber-lining for the two 5,000-gallon steel storage tanks. This lining is not one layer of rubber, but three—hard rubber for maximum corrosion resistance sandwiched between soft rubber for added protection.

Installed over 20 years ago, the two B.F.Goodrich rubber-lined tanks pictured here are still in excellent condition, have needed no repairs of either the lining or the metal.

In the past 20 years, we have lined hundreds of tanks for alum service, as well as more than 75 railroad tank cars, and thousands of pieces of pipe and fittings. While the initial cost of B.F.Goodrich rubber-lining is somewhat higher than wood or lead-lined tanks, the rubber-lined tanks do not leak, require little or no maintenance, and are, therefore, much more economical in the long run. For more information, write *B.F.Goodrich Industrial Products Co., Dept. M-845, Akron 18, Ohio.*

B.F.Goodrich

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MILLER FREEMAN PUBLICATIONS

The Editor Reads His Mail

Address letters to The Editor, PULP & PAPER, 1791 Howard St., Chicago 26, Ill.

Modernization Helped Too

—Liverpool, N.S.

Editor: Caption material in your article, "Air Systems at the Paper Machine," (PULP & PAPER, Feb. 1960) created the impression that installation of totally-enclosed hoods on two paper machines at Bowaters Mersey Mill resulted in doubling daily tonnage from 250 to 500.

Actually, prior to the installation we were producing more than 480 tons per day with open-type hoods. In order to produce 500 tons or more it was necessary to include the totally-enclosed units in our present speed-up program—since with higher speeds vapor removal and working comfort are major problems. At the same time, the old hoods were due to be replaced.

I do not wish to discredit the totally-enclosed hoods, as they are most efficient and doing the job for which they were designed. The paragraph in the body of the article dealing with their performance is quite correct.

H. A. PATERSON
Mill Manager
Bowaters Mersey Paper Co. Ltd.

Editor's Note: Certainly, substantial tonnage increases had been established in numerous modernization and speed-up projects over the years since the 250-ton machines were installed in 1930. This, as Mr. Paterson points out, was made abundantly clear in the text of the article. The picture caption on page 99 *was* misleading. What the author wanted to convey was the fact that new hoods did contribute to the final tonnage boost—from 480 to 500 or more—with major alterations to existing process air equipment.

On Coating Research

Editor: Thank you for your accurate report on my paper describing the finishing of coated paper covered by S. D. Warren's patent #2,919,205. (Pulp & Paper issue of April 1960, Vol. 34, No. 4, Pages 74 and 75.)

While the editorial comment was correct in pointing out that our patent covers certain processes currently being explored by others, I trust my remarks at the TAPPI meeting will not be interpreted as a threat against continued research by them in this field. The underlying concept of our patent structure, as I understand it, is that it was designed to foster research by the publication of new and interesting developments.

I should also like to point out that it is the intent of the Warren Company to license others and to work cooperatively with others in this new area except in certain specialized applications in the highest quality coated papers.

FREDERICK H. FROST
S. D. Warren Company
Research Director

U. S. DEPARTMENT OF COMMERCE
BUSINESS AND DEFENSE SERVICES ADMINISTRATION
WASHINGTON 25, D. C.

April 8, 1960

Mr. Albert W. Wilson
Editor
Pulp and Paper
1791 Howard Street
Chicago 26, Illinois

Dear Al:

Just a few words to congratulate you on your excellent April 1960 issue of Pulp and Paper.

Because of illness, I did not get up to New York for Paper Week this year. Thus your coverage of several of the highlights of Paper Week in your April issue proved exceedingly interesting and valuable to me. For example, your review of Dr. McArdle's presentation on the timber situation and "The Inside Story on Moralyn" were most worthwhile.

With best personal regards.

Very truly yours,

W. LeRoy Roubrech
Assistant Director for
Pulp, Paper, and Paperboard
Forest Products Division

Paper sculpture by Giuseppe Baggi

Pulp from **Gottesman** *means...*

EXPERIENCE!

Bleached and Unbleached Sulphite • Bleached Hardwood • Groundwood
Bleached, Semi-Bleached, and Unbleached Kraft

GOTTESMAN–CENTRAL NATIONAL

ORGANIZATION

WOOD PULP G

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MONTHLY REPORT – WORLD NEWS

SECOND KRAFT PULP, PAPER MILL . . . for Georgia-Pacific Corp. 250-ton plant to be located at Eureka, Cal., will utilize waste chips from firm's redwood operations in northern California. Operation scheduled for early 1962. Ultimate capacity: 600 daily tons. . . . Company's first kraft paper and containerboard mill was completed at Toledo, Ore., in 1958 with capacity of 250 tons, later expanded to 350 and now being raised to 600.

FURTHER CANADIAN DIVERSIFICATION . . . reported by Price Bros. & Co. Ltd. Will spend $22,000,000 for 45,000-ton paperboard machine and 200-ton kraft pulp mill at Kenogami, Que. Primarily a newsprint producer, Price has been contemplating paperboard expansion. Company will probably consume 40% of additional pulp, sell remainder.

EARNINGS CATCHING UP . . . With first-quarter output at new high—8% above year ago, pulp and paper earnings were up 7.6%. APPA estimates consumption for year will show 3 to 4% increase. Price boosts in several grades should help earnings in current quarter.

STEPPED-UP CAPITAL INVESTMENT . . . announced by Scott Paper Co. Estimated $31,000,000 earmarked for 1960, of which $25,000,000 will go for plant and equipment additions and improvements and $6,000,000 for timber resources and investments in foreign operations.

UNDER CONSTRUCTION IN SAN JOAQUIN VALLEY . . . near Ripon, Cal., is Simpson Lee Paper Co.'s mill expected to be in operation in 1961. Firm will order Beloit machine with 136-in. wire and plans installation of Gardner high-velocity dryers. Output to be same line produced at Vicksburg, Mich. mill. (See story this issue.)

MULTI-INDUSTRY TREND MAKING ITSELF FELT . . . Scott Paper Co., Western Gear Works, Pacific Tow Boat Co. join to bid on Everett (Wash.) Naval Shipyard. Also bidding: Columbia-Cascade Corp.

IMPROVED ECONOMIES AND PRODUCT QUALITY . . . will result from $11,000,000 expansion and modernization set by Oxford Paper Co., Rumford, Maine. 1960 program will include new sulfite pulp facilities, increased hardwood kraft pulp output. Capital expenditures in 1959: $8,000,000.

FIFTH FINE PAPER MACHINE . . . scheduled for Thorold, Ont. plant of Provincial Paper Ltd. (subsidiary of Abitibi Power & Paper Co. Ltd.). Four units are now running at capacity and "making record shipments," according to President D. W. Ambridge.

25% ABOVE 1959 . . . will be pulp and paper's capital expenditure for 1960. 1959's capital outlay was $630,000,000. Some $788,000,000 planned this year. Looking into the future: $678,000,000 for 1961, $556,000,000 for 1962, $578,000,000 for 1963. . . . Bigger Increase for Research indicated. Total for 1959 was $63,400,000. Planned for 1960: $76,700,000; for 1963: $95,900,000.

BLEACH PLANT SET FOR WALDORF-HOERNER . . . at Missoula, Mont., where multi-stage operation will be incorporated into pulp and paper mill. Say Nils Sandberg, president, and R. N. Hoerner, board chairman, Hoerner Boxes Inc.: "Plant will be of most modern and automated design, complete with drying and baling facilities for 100 daily tons bleached sulfate pulp." Dorr-Oliver-designed equipment will be used, with a chlorine dioxide process. (Hoerner Boxes and Waldorf Paper Products Co. became equal partners in mill operation in June 1959, when addition was started to house paper machine. Machine scheduled for operation in fall. (See PULP & PAPER, March 1960.)

CANADIAN NEWSPRINT PRODUCERS HAPPY . . . about recent slippage of Canadian exchange rate. With former 5¢ premium in relation to U.S. dollar, they were selling at 5% discount south of the border. (Payment is stipulated on basis of Canadian funds.)

. . . Fluid Power news

REPORT NO. 12,107

HYTAC* AIDS MAKING OF NEW EXTENSIBLE PAPER

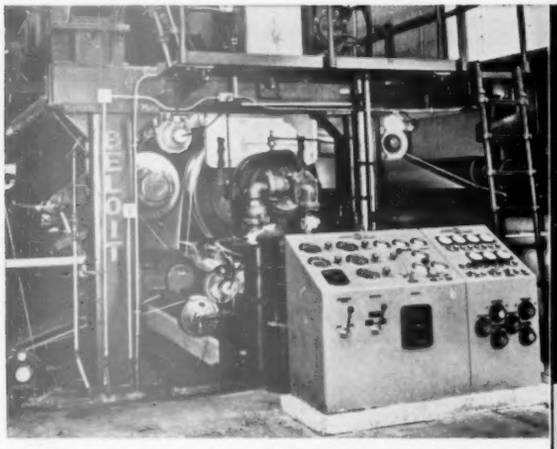
From Oilgear *Application-Engineering* Files

HOW *HYTAC** SYSTEMS CONTROL NEW EXTENSIBLE PAPER MACHINE SECTION SPEEDS IN 12 MILLS

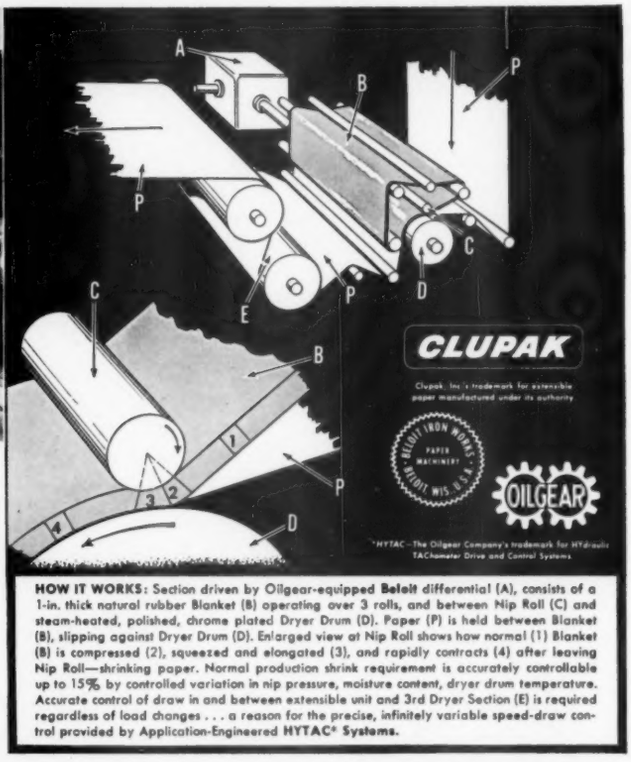
USERS: *Twelve Paper Companies—Licensed by CLUPAK, INC.*

Builder—Sections and Differential Drives—Beloit Iron Works, Beloit, Wisconsin

DATA: Systems to vary and precisely control speed and draw of new sections that can be an integral part of complete, new paper machines, or inserted into existing machines for production of CLUPAK® extensible paper—a revolutionary, patented, smooth, tough, kraft sheet. Original requirements called for systems that, when applied to *Beloit* mechanical differentials, would: *1.* Provide precision-controlled, infinitely variable section speed decrease up to 10% under main lineshaft speed—as selected from remote pushbutton stations. *2.* Maintain selected section speed within ±0.25% max. variation over a 50% load change at max. lineshaft speed. *3.* Be: compact; impervious to heat, high humidity; thrifty on electrical power input, wiring, installation downtime, floor space; completely free, if possible, from maintenance-provoking belts, chains, relays. *4.* Insure trouble-free, continuous, heavy-duty, full-production paper machine drive service—but permit section immobilization for production of non-extensible stock. *5.* One source and responsibility for these speed and draw controls preferred.



One of the most recent of the twelve new **Beloit** extensible sections and control consoles incorporating **HYTAC* SYSTEMS** for precise speed and draw control—as installed on No. 1 machine at **International Paper Company's Southern Kraft Division Mill, Camden, Arkansas,** to produce CLUPAK® extensible paper. Control console instrumentation includes direct-reading hydraulic pressure gages from the **OILGEAR System** to provide operators with constant, visual, exact indication of load or draw on the section.



HOW IT WORKS: Section driven by Oilgear-equipped **Beloit** differential (A), consists of a 1-in. thick natural rubber Blanket (B) operating over 3 rolls, and between Nip Roll (C) and steam-heated, polished, chrome plated Dryer Drum (D). Paper (P) is held between Blanket (B), slipping against Dryer Drum (D). Enlarged view at Nip Roll shows how normal (1) Blanket (B) is compressed (2), squeezed and elongated (3), and rapidly contracts (4) after leaving Nip Roll—shrinking paper. Normal production shrink requirement is accurately controllable up to 15% by controlled variation in nip pressure, moisture content, dryer drum temperature. Accurate control of draw in and between extensible unit and 3rd Dryer Section (E) is required regardless of load changes . . . a reason for the precise, infinitely variable speed-draw control provided by Application-Engineered **HYTAC* Systems.**

SOLUTION: Application-Engineered *HYTAC** (HY*draulic* TAC*hometer*) controlled differential drives consisting of Oilgear "DRt-3517" Variable Displacement Pumps, "H-6017" Constant Displacement Motors, and *HYTAC** components with remote pushbutton control to provide precise speed-draw control on *Beloit* extensible sections installed and commercially producing CLUPAK® extensible paper at nine mills in the United States, two in Canada, and one in Sweden. Several other paper manufacturers licensed by CLUPAK, Inc., to produce extensible paper under its authority, now have these Oilgear-equipped *Beloit* extensible sections on order. Oilgear *HYTAC** Drive-Control Systems were selected after 3 years of development on this process and machine—from a 2-in. table model, through a 15-in. laboratory model, and a 60-in. pilot model—as best suited to provide the accuracy and range of control required for the variable speed drives. *Actual commercial operation has proved that these highly accurate, compact, heavy-duty, Oilgear Systems can maintain any selected section speed with less than ±0.25% variation* regardless of load change *over a 10:1 range of lineshaft rpm—plus enabling operators to infinitely vary each section's drive rpm up to 15% under main lineshaft rpm . . . exceeding originally specified requirements!*

Other inherent Oilgear "Any-Speed" Drive features are: cushioned, controlled starting, acceleration, deceleration, braking . . . positive, automatic overload protection . . . continuously filtered pressure and flood lubrication. Copies of Oilgear's *Fluid Power NEWS* 3, 5, 8, 9, 11—with detailed descriptions of some of these and other *Application-Proved* installations are available on request.

For practical solutions to your linear or rotary Controlled Motion problems, call the factory-trained Oilgear Application-Engineer in your vicinity. Or write, stating your specific requirements, directly to . . .

THE OILGEAR COMPANY

Application-Engineered Controlled Motion Systems

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MONTHLY REPORT – WORLD NEWS

HIGHEST MONTHLY SALES ON RECORD . . . reported in March by printing paper merchants. Figure stood at $135,000,000 8% above year ago.

STRUCTURAL WORK COMPLETION SET FOR JULY 1 . . . at Castlegar, B.C. pulp and sawmill of Celgar Ltd. Already spent: $13,000,000; additional $13,000,000 committed on firm price contracts. Equipment being installed in woodroom and recausticizing plant. Installation of pulp-drying machine and one boiler underway. Steam plant and woodroom set for November start-up in readiness for early 1961 pulp production. Says T. N. Beaupre, president of parent Columbia Cellulose Co. Ltd.: "World markets for kraft pulp have improved during year; further improvement forecast by virtually every authoritative source."

DOUBLED CAPITAL EXPENDITURES . . . expected this year by Rayonier Inc. Such outlays will approach $20,000,000. Substantial sums needed to convert to sulfate in British Columbia and to sodium base at the Grays Harbor div., Hoquiam, Wash. Second machine will be installed at latter mill.

TWO-YEAR LOW RECORDED BY CHICAGO WASTEPAPER PRICES . . . Declines of $2 to $3 per ton blamed on lower business level, reduced running time at paperboard mills. Downgrade underway since late 1959. Mill inventories in excess of 30-day supply, nearly double normal stockpile.

INCREASE FOR PAPER GRADE MARKET PULP . . . receipts and consumption in first two months. Receipts were 478,026 tons, up 7.4% from 1959; consumption at 491,551 showed 11.5% gain. End-of-February inventories at 358,957 were down 0.9%.

ALL-TIME MARCH PEAK FOR NEWSPRINT . . . when North American production was 747,363 tons, 10.9% above year ago. U.S. output was 172,330, Canadian 575,033. For first quarter, total was a record 2,144,954, 10.2% above same 1959 period.

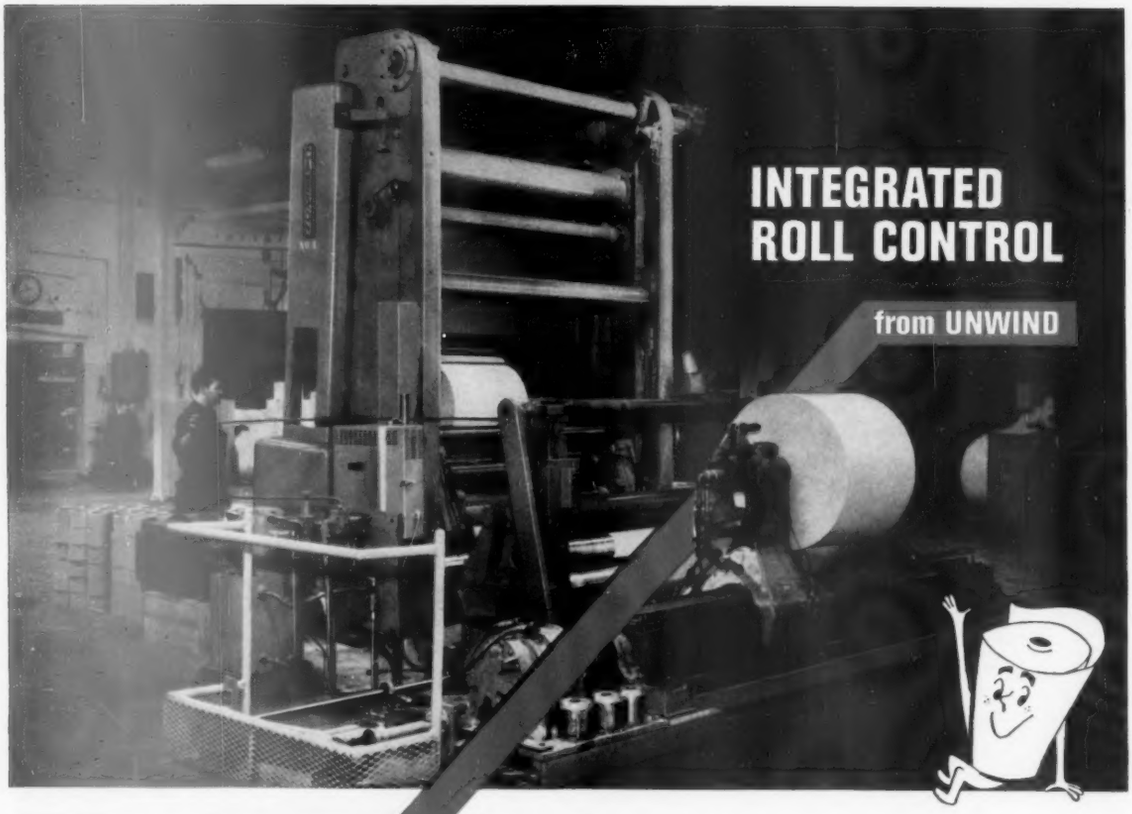
DESPITE RECENT GENERAL DECLINE IN ECONOMY . . . industry expects record levels in 1960, says Roy K. Ferguson, St. Regis Paper Co. board chairman. Even with high rate of new capacity in recent years, industry enjoys healthy utilization. Still ample capacity for present demand. Pulp, paper must continue steady growth to meet increasing demand. Consumption expected at 50,000,000 tons in 1965, 60,000,000 in 1970.

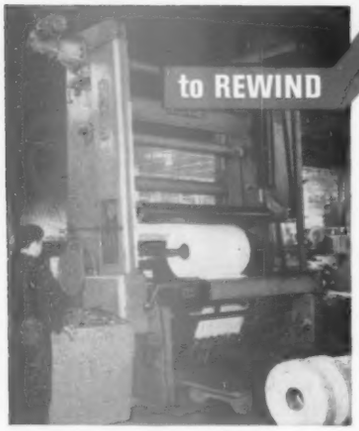
MULTIMILLION-DOLLAR EXPANSION . . . in enamel printing paper production announced by Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis. New machine (operation set for January 1962) will bring to 11 number of units producing grade.

PROFITS NOT EXCESSIVE . . . in forest products industry—especially pulp and paper, says J. V. Clyne, board chairman, MacMillan, Bloedel & Powell River Ltd. Not fair, he says, to refer to profits as enormous. "People forget vast capital expenditures necessary to earn those profts." (During past two or three years firm has invested more than $80,000,000 at Port Alberni, B.C. mills alone.)

60,000-TON PAPERBOARD MACHINE HIGHLIGHTS . . . $12,000,000 expansion reported by Federal Paper Board Co. Inc. Project centers at Seaboard mill of Manchester Board & Paper Co. div., Richmond, Va. Includes cold soda process to produce hardwood pulp and construction of carton plant.

OPTIMISM PERVADED 21st SPRING MEETING . . . of Fibre Box Assn. at Chicago. Forecast Clarence F. Smith, vice pres., Inland Container Corp., and assn. president: Industry will enjoy continued growth not only during 1960, but throughout next decade. Fiber containers continue as primary packaging for goods from farm and factory to consumer. . . . Shipments of corrugated and solid fiber boxes during 1960's first quarter were 2% higher than in same 1959 period.





Cameron 450. Refinements include vibration-free main drive transmission, dynamically balanced rotating elements, belt-driven riding roll, automatic counterweighting, friction-free rewind shaft bearing holders, electric riding roll lift*, automatic roll ejector*, and many other Cameron features.
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MONTHLY REPORT – WORLD NEWS

NEW ZEALAND'S NEWEST . . . is Canterbury Pulp & Paper Ltd., registered recently with capital of £250,000. All shares to be taken up by New Zealand Forest Products Ltd. No site or construction plans reported. Eventual capitalization: £2,500,000.

PHOTOGRAPHIC PAPER TO BE PRODUCED IN INDIA . . . Agreement reached with French firm to build plant in Madras with annual output of $14,700,000 (Rs 70,000,000). Also included: motion picture and X-ray films. . . . In other Indian action—government has licensed private company to build 20,000-ton mill in the Nilgiris in Madras at cost of $12,600,000 (Rs 60,-000,000). U.S. investment in equity capital is about $1,575,000.

NO EXCESS TONNAGE FROM SCANDINAVIA . . . Commenting on Outer Seven Free Trade Area, L. W. Farrow CBE, chairman of Associated Paper Mills Ltd., England, says that, in present state of world paper trade, Scandinavian mills probably won't have excess tonnage to send the United Kingdom.

£1,000,000 TO LIFT NEWSPRINT OUTPUT . . . at Australian Newsprint Mills Ltd., Boyer, Tasmania, is expected to result in production of 90,000 long tons, 7,000 more than last year's record. Increase results in part from inclusion in furnish of some 22% semichemical pulp produced in new cold caustic soda plant.

SWEDEN LEADER IN PULP EXPORTS . . . in 1958 with 31% of world tonnage, followed by Canada (26%) and Finland (18%). In same year, Sweden produced 15% of world's fiberboard (second behind U.S. with 41%) but was biggest consumer per 1,000 inhabitants (23 tons).

CHILEAN NEWSPRINT PRODUCTION INCREASE . . . results from modernization at the San Pedro mill of Cia. Manufacturera de Papeles y Cartones. Annual output is boosted to 60,000 tons, allowing export of $5,000,000 annually while satisfying domestic needs. Project cost more than $1,000,000.

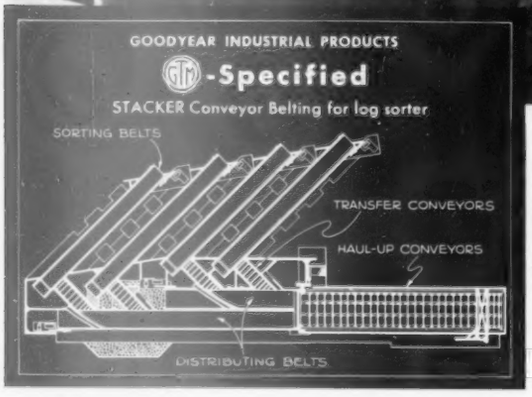
CLUPAK ENTERS EUROPEAN MARKET . . . with start of full-scale production at Dynas AB in Sweden. Patent, licensing and research company for the tough stretchable paper is Clupak Inc., New York, N.Y. Dynas is turning out the extensible kraft on a new J. M. Voith (W. Germany) 205-in. Fourdrinier at the Vaja mill.

EXPANSION IN RHODESIA . . . where Umtali Board & Paper Mills Ltd. is expected to build plant supplying Federation's needs in newsprint, mechanical printings, etc. Cost expected to be about $2,100,000 (£750,000).

HOPSCOTCHING THE NORTH AMERICAN INDUSTRY . . . Sandwell International Inc. retained as engineer for expansion at Grays Harbor Pulp & Paper Co.; joint announcement by Rayonier Inc. and Hammermill Paper Co.; involved will be 180-in. Beloit fine paper machine, supporting facilities and general modernization. . . . Union Bag-Camp Paper Corp. stockholders approve merger of River Raisin Paper Co., which will be operated as a division. . . . St. Regis Paper Co. concludes agreement with Southland Paper Co., Lufkin, Texas, for manufacture of paper on one of Southland's four machines; production available to St. Regis and Perkins-Goodwin Co.

MORE ABOUT THE INDUSTRY . . . Crown Zellerbach Canada Ltd. will spend $750,000 to modernize barking, chipping at Ocean Falls, B.C. . . . Improved efficiency, upgraded quality emphasis of $850,000 project at Crofton, Vancouver Is., B. C. bleached kraft mill of British Columbia Forest Products Ltd. . . . MacMillan, Bloedel & Powell River Ltd. acquires 92% control of Sidney Roofing & Paper Co. Ltd., whose plant at Burnaby, B. C., was recently completed at cost of $7,000,000. . . . Champion Paper & Fibre Co. has acquired Crown Plastic Cup Co., Fort Worth, Texas. . . . Poshastin Lumber & Box Co., operating sawmills in Washington State, considers building pulp mill along upper Columbia River. . . .

Handling 180 million pulp logs in just 3 years would be a real challenge to any conveyor belting. So plenty of credit for this eye-opening accomplishment—at a big Northern mill—is due the 60" Stacker Conveyor Belting recommended by the G.T.M.—Goodyear Technical Man. Six of his belts went on the main section of a unique "log sorting machine" used to pick 3 different companies' logs out of the river—then separate them according to ownership. And the G.T.M.'s belts had to take a lot of punishment from flying logs—slashing pickaroons—and the mere handling of up to 26,000 logs an hour. Yet even at the end of three full 60,000,000-log seasons, these belts were still in good shape and ready for more.



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WORLD PULP & PAPER Technical News

Storage Effects on Ammonium Sulfite—Japan

OGIWARA, YOSHITAKA, and SHIMODA, ISAO. J. Sociedad Textile and Cellulose Inds., Japan 15, no. 12: 972-9 (Dec. 1959). [Jap.] A. B. I. P. C. 30:928-9.

The effects of storage conditions on the purity of ammonium sulfite monohydrate (in crystalline and dissolved forms) were studied. On exposure to the atmosphere, the crystalline material oxidizes rapidly. Polyvinyl chloride film is superior to polyethylene film in protecting the crystals from oxidation. Solutions of ammonium sulfite are more stable the higher their concentration. Ammonium-base cooking liquor contains varying amounts of ammonium sulfate as a degradation product. The presence of this impurity accelerates the cooking reaction, decomposes the sulfur dioxide in the liquor and lowers the yield of pulp until the sulfate concentration reaches 20%; at higher ammonium sulfate contents, pulp yield increases again gradually. The lower the liquor ratio, the faster is the cooking reaction and the more stable is the pH of the liquor. Neither the liquor ratio nor the amount of ammonium sulfate in the liquor has any direct effect on the quality of the pulp obtained.

Specific Gravity of Cellulose—Russia

SHARKOV, V. I., and LEVANOVA, V. P. Zhur. Priklad. Khim. 32, no. 10: 2357-9 (Oct. 1959). [Russ.] Abstr. Bull. I. P. C. 30: 941-2.

A description is given of a modification of the method of Hermans (cf. B.I.P.C. 16:494) for the determination of the specific gravity of cellulose, which requires only 1.5-2 hr. instead of the usual 8-10 hr. Cellulose pellets 1-2 mm. in diameter (for fibrous materials) or particles of about 0.5 mm. (obtained by pressing powdered materials) are dried at 105° C for 3 hours and, after cooling in a desiccator, are wetted with absolute alcohol then washed with carbon tetrachloride for about 30 min. Several deaerated pellets or lumps are then placed into tubes with carbon tetrachloride. The tubes are sealed, heated to a temperature at which all samples sink and kept at this temperature for 30 min. The temperature is lowered gradually in steps of 0.5-1°, and the samples are equilibrated for 20 min. at each temperature. The temperature at which the majority of the pellets or lumps become suspended is taken at the flotation temperature. The specific gravity is calculated in the usual way and corrected for a temperature of 20°. For samples having a specific gravity less than 1.500 carbon tetrachloride is replaced with bromobenzene. Determinations of specific gravity of several cotton and regenerated cellulose samples by the modified method and by the original Hermans method gave identical values, with variations of parallel determinations not exceeding ±0.001.

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Pitch Troubles—Japan

AMINO, YOSHIYUKI, and NOKIHARA, EIZO. J. Japan. Tech. Assoc. Pulp Paper Ind. 13, no. 9: 645-9 Sept. 1959) [Jap.] Abstr. Bull. I. P. C. 30:889-90.

Attempts were made to reduce pitch troubles during beating of bleached sulfite pulp (50:50 mixture of softwood and hardwood) by acidification of the pulp slurry, by addition of aluminum sulfate, and by addition of sodium hexametaphosphate. Contrary to earlier results obtained by Swedish workers, acidification aggravated the pitch troubles but was somewhat beneficial (in agreement with the Swedish results) for unbleached softwood sulfite pulp. Aluminum sulfate reduced the amount of pitch deposited if the pH was raised above 5.5 with sodium hydroxide. Its efficiency was higher the greater the amount added. The rate of beating and sizing effect were unaffected by aluminum sulfate additions. The addition of sodium hexametaphosphate was similarly effective, 1.5% of this compound being equivalent to 0.5% aluminum sulfate in reducing pitch deposition. Pitch troubles increased significantly with increasing temperatures (30-50° C). It is suggested that the formation of aluminum hydroxide floc and its combination with (or occlusion of) pitch particles may be a necessary condition for the deposition of sticky pitch (on the walls and balls of a Lampén mill or on the wires of a pitch tester) from pulp that has been chlorinated during bleaching.

Reed Sulfate Pulp—Rumania

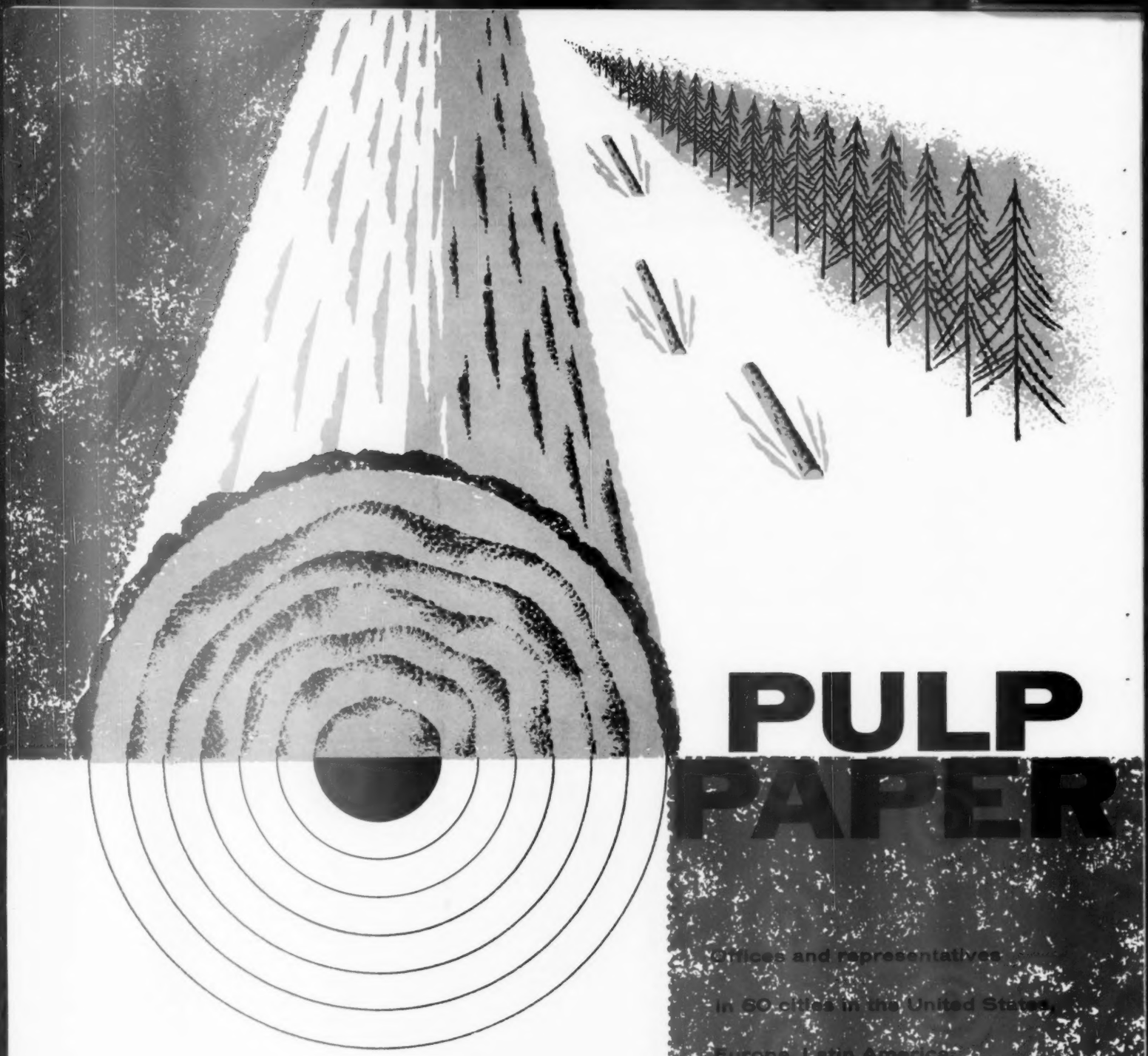
VEISBERG (WEISSBERG), M., and BAKK, A. (NDREI). Celuloză şi hîrtie 8, no. 9: 286-92 (Sept. 1959). [Romanian] Abstr. Bull. I. P. C. 30:924.

Reed sulfate pulp of papermaking quality was prepared by cooking at 160 and 178° C with addition of 0-60% (by volume) black liquor to the white liquor. With 40 and 60% black liquor additions at 160°, chlorine consumption (I) of the resulting pulp increased by 9 and 14%, respectively, over the amount required for bleaching normal kraft pulp. At 178° the respective increases in I amounted to 22 and 35%. These increases are attributed to the increased lignin content and to the presence of secondary products that darken the pulp's color. No increase in I was noted with black-liquor additions of 0 to 20% at 160°, but the I increased by 7% for pulp cooked at 178°.

ClO_2 Bleaching—Finland

VIRKOLA, N.-E. Paperi ja Puu 41, no. 11: 526-7, 529, 531-4 (Nov. 1959). [Ger.] Abstr. Bull. I. P. C. 30:924.

Reasons for the popular use of chlorine dioxide (I) in pulp bleaching, the optimum conditions for bleaching with I and the effect of I on cellulose and hypochlorite oxycellulose are discussed, based on studies carried out at the Finnish Pulp & Paper Research Institute and elsewhere. A comparative investigation of the final bleaching of pre-bleached sulfate and sulfite pulps with I, with hypochlorite, or with hypochlorite plus I indicated that application of two I stages with an intermediate alkaline extraction was the best sequence for both pulps. Under optimum conditions, I does not change the properties of pulps, except their brightness. Therefore, correct cooking and pre-bleaching are of utmost importance to the success of I bleaching. Faults occurring in the early stages of pulp treatment cannot be corrected later by means of I.



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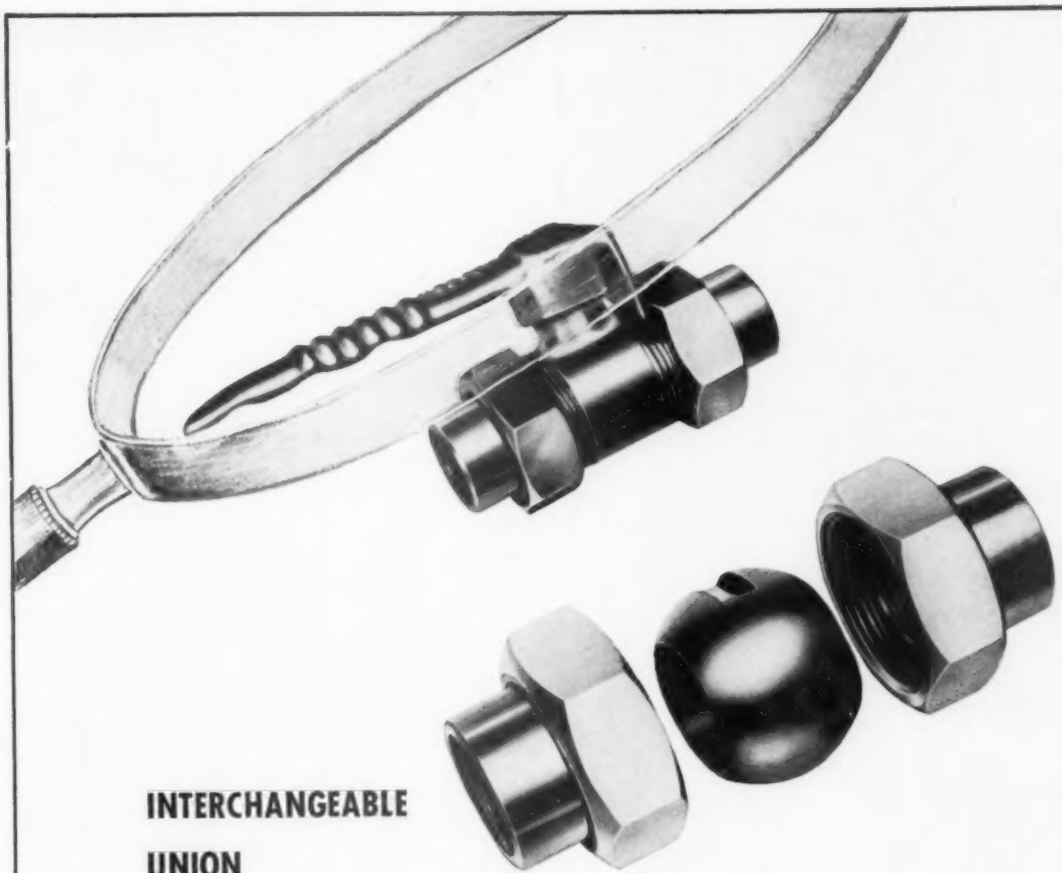

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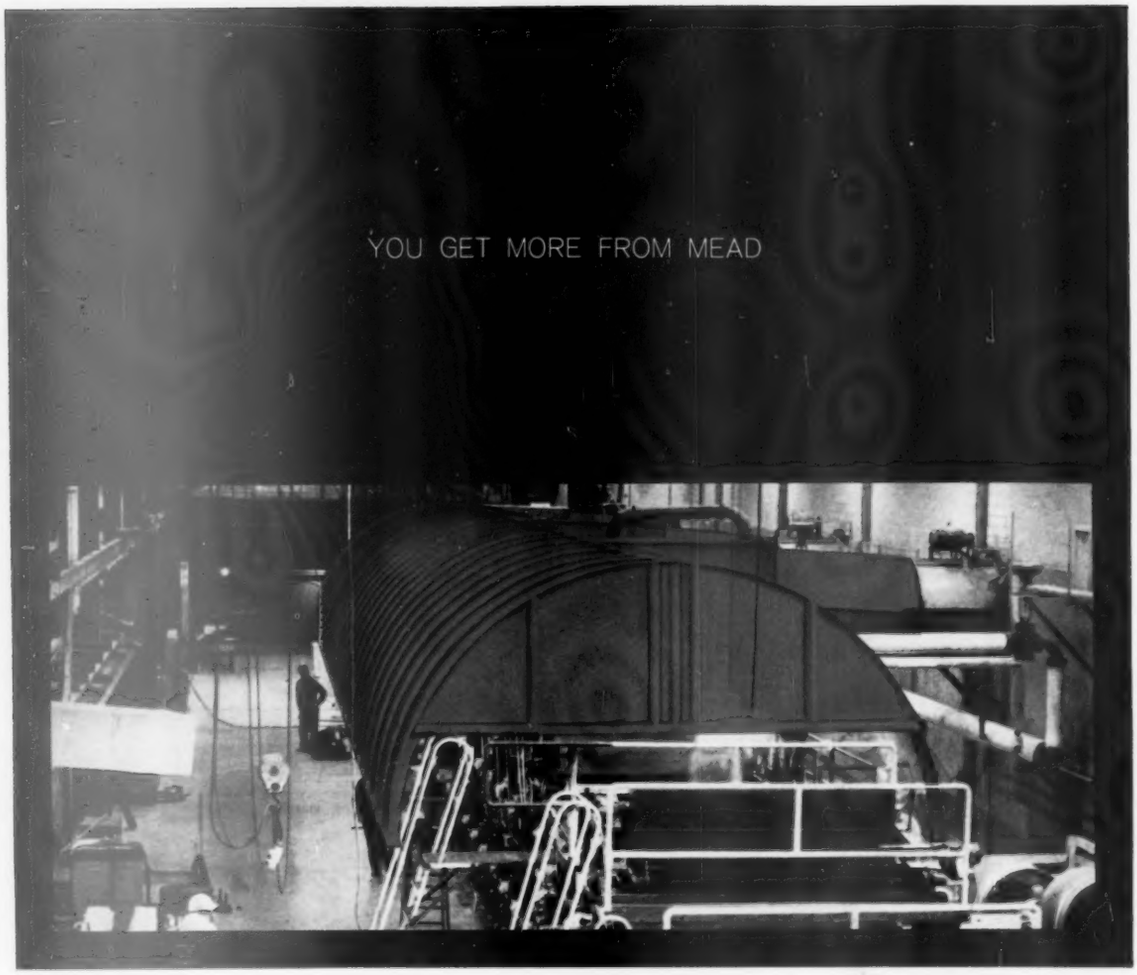

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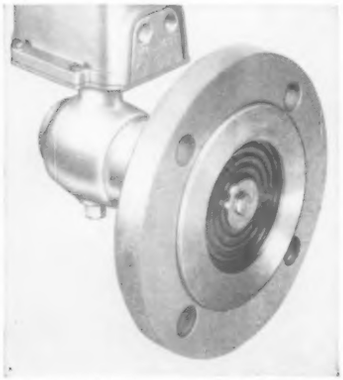

All wetted parts of the 13FA Liquid Level Transmitter diaphragm capsule are of 316 stainless steel. Special coatings, for additional corrosion protection, are also available

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JUNE, 1960 | *Published for the information of paper and board mills* | VOL. 2, NO. 4

Eliminate Annular Rings and Offsets

HOW TO ACHIEVE SUPERIOR REWOUND ROLLS

Improved Slitter Guaranteed To Run True Within .001"; Winder Designs End Offsets

In rewinding paper and board, roll quality is often impaired by two relatively common, mechanical faults—annular rings and offsets.

Both give evidence of imperfections in the roll, spoil its appearance and sometimes detract from its end-use performance—annular rings because they are a symptom of variation in web width, and offset rings of poor rewinding. Both problems also make the rolls vulnerable to shipping and handling damage and invite customer criticism.

Both are becoming an increasingly important consideration in our industry because new high speed web-fed, precision converting machines require exact dimension in the sheet and straight sided rolls.

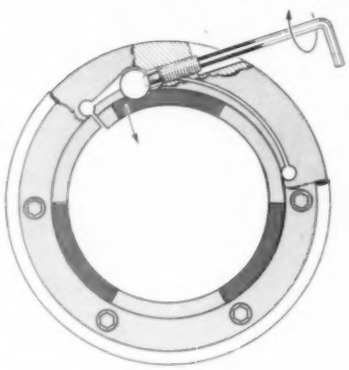
• • •

Even minute variations in web width run the risk of handicapping high speed converting or automatic edge-guided machinery.

Typical examples where perfection is required are some grades of register bond with edge perforations that are indexed from the edges of the sheet—and envelope grades that are fed into automatic processing machinery.

ANNULAR RINGS ELIMINATED. Langston's assistant chief engineer William Emerson compares appearance of two rolls. Annular rings are non-existent in roll at left produced by Langston winder with precision slitters.

Annular rings and offsets can be eliminated by design features incorporated in Langston slitters and winders, thereby highly improving the appearance as well as the quality, and thus the saleability, of the product.



SLITTER ASSEMBLY. A spring-leaf locking principle holds the slitter to the shaft without distortion or runout. Setup can be quickly and easily made.

• • •

Rolls can be wound free of annular rings by use of Langston slitter assemblies. This design insures the most precise slitting and Langston guarantees slitter wobble will not exceed .001".

It is variation in web width—resulting from runout on shear-cut and score-cut slitters—that creates the wavy slit edge that forms annular rings (see sketches, next page). In shear-cut machines these rings are spaced proportionally to the slitter diameter corrected for overspeed. This relationship can be proved mathematically (see formula, next column).

To eliminate annular rings, Langston has developed a new slitter assembly incorporating several basic improvements on which patent applications have been made. First of all the slitter assembly has a wider contact area on the slitter shaft, thus increasing the slitter's stability by producing a better "column ratio", or base to height relationship.

The hubs of the slitters are interlocking to permit narrow slitting. Also the hub is solid rather than split, thus inherently resisting any distortion that would normally cause a cocked slitter.

The gripping action is accomplished by a leaf spring principle as shown in the accompanying drawing. Thus any hinge effect or distortion from a weak area is avoided and the slitter runs true. The spring leaf locking action makes it unnecessary to use set screws and gibs against the shaft for holding the slitter assembly in position.

The slitters can be sharpened on or off the machine. They are rugged enough to withstand hard usage and designed for quick and easy setup.

Because it is so important that slitter assemblies be true running, Langston slitters are made with maximum care and accuracy to minimum tolerance, and balanced.

(Continued on Page 2)

Formula To Calculate Annular Ring Diameter

Annular ring diameter can be calculated by using the following equations: The diameter of the first annular ring equals:

1. $\dfrac{\text{Length of paper which passes the slitter while it turns one revolution}}{\pi}$

or 2. $\dfrac{\text{Dia. of slitter} \times \pi \times 100}{(100 + \text{percentage of overspeed}) \times \pi}$

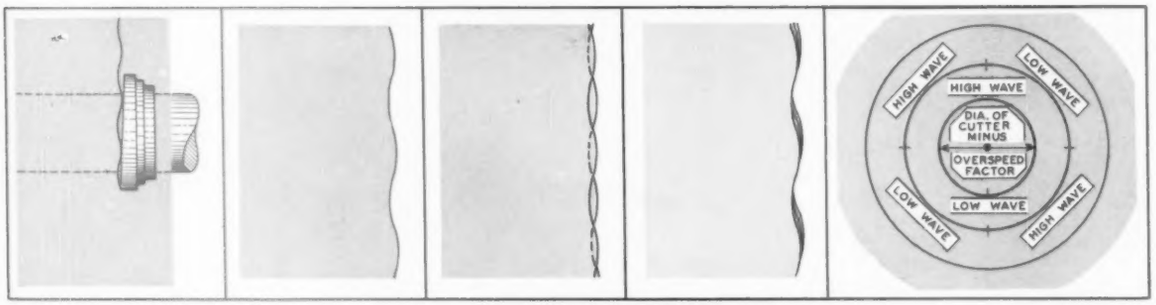
If the slitter is running 15 percent overspeed, the first annular ring diameter would be:

$$\frac{\text{Dia. of slitter}}{1.15}$$

Example: A typical winder has power driven slitters of 10" diameters and a slitter surface speed of 1200 fpm at 1000 fpm of web speed.

The first annular ring diameter, therefore, equals:

$$\frac{10" \times \pi \times 100}{(100 + .20) \times \pi} \text{ or } \frac{10"}{1.2} \text{ or } 8.33" \text{ Dia.}$$



. . . distorted slitter . . . makes wavy slit . . . overlaps hide faults . . . until waves nearly match . . . where annular rings form

(Continued from preceding page)

Unlike annular rings which appear in a pattern related to slitter inaccuracy, offset rings are caused by lateral movement of winding drums, rewind shaft or slitter shaft or abrupt variations in tension.

Offset rings show as circular formations also on the roll face but not in a geometric pattern like annular rings. The offset rings detract nonetheless from roll quality and mar the looks of the face of the roll. To the extent that the rewound roll is not straight-sided, with the desired perfect edge, it exposes itself to shipping and handling damage.

Offsets make the roll customer supercritical and lead him to suspect other imperfections in the roll. When the offsets are caused by loose core starts, it is possible that jostling of the roll in transit will loosen the roll throughout, telescope it and make it unsuitable for use in high speed printing, laminating or other paper processing machinery.

• • •

Offsets, like annular rings, can be eliminated by better machine design and construction. Several major Langston engineering achievements provide means to avoid lateral movement and abrupt variations in tension that cause offset rings.

These improvements include:

- Elimination of end play of rewind shafts.
- Elimination of end play in winding drums, rider roll and slitter shaft.
- Accurate and uniform tension control.
- Controlled rider roll nip pressure.
- Means to obtain good hard roll centers.

• • •

When a rewind shaft uses locking collars, wear of the collar will develop and permit lateral movement of the shaft. This allows end play causing offset rings. Rewind shafts often become bent from hard or careless usage, which contributes to excessive collar wear and lateral movement, hastening development of an offset problem.

To eliminate this condition, Langston furnishes bearing housings secured to the rewind shaft. These housings are held stationary, and the rewind shaft rotates in anti-friction thrust bearings. Mill type and heavy duty rewinders are equipped with spherical, ball-joint housings as well as the anti-friction thrust bearings.

This arrangement provides maximum flexibility in the use of rewind shafts and eliminates lateral movement.

• • •

Drum and slitter shaft lateral movement is another source of offset rings. This lateral movement occurs from inadequate thrust provision. Langston machines use tapered roller bearings to eliminate lateral movement of these critical machine elements. Each bearing is individually fitted to provide minimum running clearance at operating temperatures.

• • •

Abrupt tension variation during the rewind is another cause of offset rings. These tension variations generally occur during periods of rapid acceleration and deceleration. However, they can also occur during normal running speeds if tensioning controls are not functioning properly.

These sudden variations in tension make the sheet walk or weave on the winding drums thus causing offset rings.

To maintain controlled tension throughout the rewind, Langston can furnish the specialized type of automatic tension control required for any application. Such tension control systems are a subject in themselves, however, and will be treated in future issues of the Langston Leader.

• • •

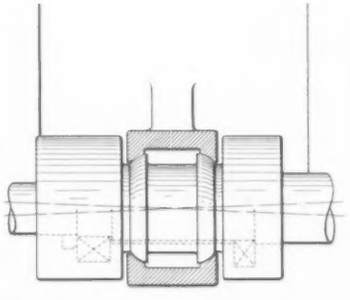
Starting with a tight core as a means of eliminating offset rings must not be overlooked. Loose core centers permit lateral slipping of the roll contributing to offset.

Langston winders can be provided with automatic rider roll and rewind shaft controls so that optimum nip pressure can be exerted during these critical first few inches of roll buildup.

• • •

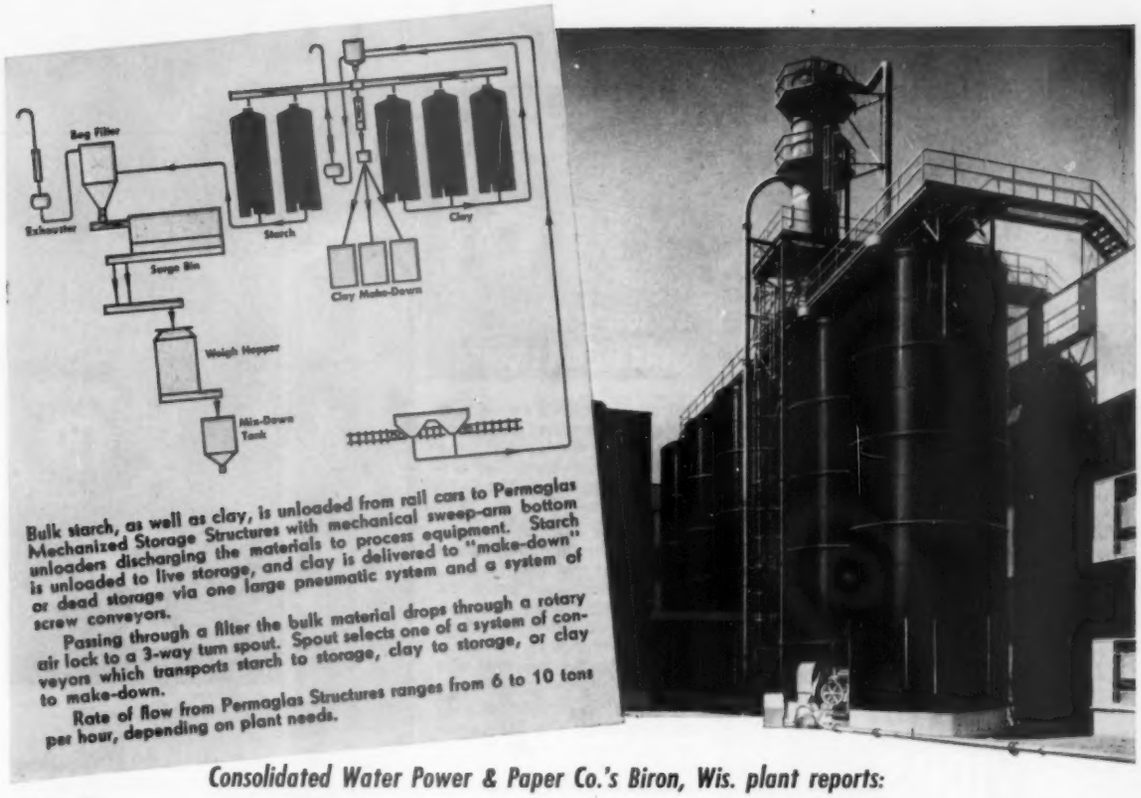
As with most products today, appearance plays an important part in influencing the customer. When paper or board is received in rolls, the best quality in the world will be something less than satisfactory, unless these rolls present an attractive appearance.

Langston winders and rewinders, equipped with the latest engineering developments, will produce precision-slit, straight edge, superior rolls, thus make it possible to ship the product as a faultless package.



PREVENTS SIDE MOVEMENT. Spherical ball joint housing for the rewind shaft is furnished for mill type and heavy duty rewinders to provide maximum flexibility in the use of rewind shafts and reduce the possibility of side movement.

Printed in U.S.A.



Bulk starch, as well as clay, is unloaded from rail cars to Permaglas Mechanized Storage Structures with mechanical sweep-arm bottom unloaders discharging the materials to process equipment. Starch is unloaded to live storage, and clay is delivered to "make-down" or dead storage via one large pneumatic system and a system of screw conveyors.

Passing through a filter the bulk material drops through a rotary air lock to a 3-way turn spout. Spout selects one of a system of conveyors which transports starch to storage, clay to storage, or clay to make-down.

Rate of flow from Permaglas Structures ranges from 6 to 10 tons per hour, depending on plant needs.

Consolidated Water Power & Paper Co.'s Biron, Wis. plant reports:

"Permaglas® Mechanized Storage System—low-cost way to handle and store bulk starch and china clay"

Here's another outstanding *Permaglas* Mechanized Storage System that is paying big dividends every month from actual savings achieved from automatic, bulk handling and storage of dry starch, and also china clay.

This Wisconsin paper manufacturing company uses two 17′ x 50′ and three 20′ x 50′ *Permaglas* Units with the exclusive A. O. Smith mechanical sweep-arm bottom unloader making possible a completely automatic vacuum system which assures dependable, continuous flow of bulk starch and clay. Two *Permaglas* Structures hold 20,000 cu. ft. of starch, while the other three store a total capacity of 42,000 cu. ft. of clay.

The principal reasons for installing and using the *Permaglas* Units are the ease in handling of the raw materials and cost savings realized from bulk storage. Other benefits enjoyed include substantial reduction in manpower needs . . . economies in bulk purchases rather than in bags . . . saving of inplant storage space for other productive uses . . . increasing production efficiencies . . . preventing hazardous accidents with safer and cleaner plant.

What's more, the *Permaglas* Structures are glass-fused-to-steel construction both inside and out. They provide utmost protection against contamination . . . simplify "bin wash-downs" . . . reduce periodic structure maintenance to a minimum.

If your plans call for an automatic bulk materials handling system — vacuum, pressure, or combination vacuum-pressure—be sure to contact A. O. Smith. We are at your service, prepared to make recommendations for a completely automatic *Permaglas* System. For more information fill in and mail coupon today.

Through research . . . a better way

A.O.Smith
CORPORATION

HARVESTORE PRODUCTS DIVISION
KANKAKEE, ILLINOIS
A. O. Smith International S.A., Milwaukee 1, Wis.

A. O. SMITH CORPORATION
Permaglas Storage Units, Dept. PP-60
Kankakee, Illinois
Send me free Permaglas Mechanized Storage Unit Bulletin MU-107.

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Which of these 5 products and services can you use... from

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fmc
FOOD MACHINERY AND CHEMICAL CORPORATION

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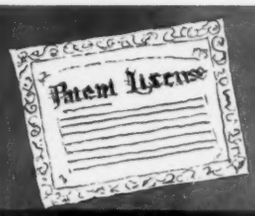
Becco Chemical Division

STATION B, BUFFALO, NEW YORK



"Enclosing $1.00 — Send Patent License"

Well, perhaps there's a little more to your gaining use of Becco patents than just mailing your dollar in, but not much more. And certainly, no more money. The $1.00 really does cover it.

Becco has lots of patents, granted as a result of innovations in the use of Hydrogen Peroxide and other Peroxygen chemicals developed in Becco's Research Laboratories. But they don't do us a whole lot of good locked tightly in our safe. So, we long ago adopted the following policy:

If one of our patents can help you, we'll be glad to license the rights to you **perpetually,** for just one dollar. You get a nice certificate, incidentally, to cover the legalities, but more important – you also get free our complete engineering help in setting up your process, handling the material, maintenance, etc., etc.

What do **we** get? You as a **customer** – we hope – but there's no obligation on your part. Just seems to work out that way, though – when we know enough about a particular peroxygen to hold a patent on its use, chances are we've also learned enough to produce it purer than anyone else. You benefit from this; we do, too.

Use the coupon below to ask for a Sales Engineer – or our list of patents – that may help you solve an important problem.

BECCO fmc

BECCO CHEMICAL DIVISION, FMC
Station B, Buffalo, New York
Dept. PP-F

Gentlemen:
Please send your list of patents available on the use of

- ☐ Hydrogen Peroxide
- ☐ Peroxygen Chemicals
- ☐ Persulfate Chemicals
- ☐ Please have a Sales Engineer call.

NAME_____

FIRM_____

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CITY_____

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Problems in handling Hydrogen Peroxide

Becco's Four-Fold Engineering Service Program—offered free—includes:

1. Comprehensive survey of your facilities.
2. Specific proposal with recommendation of proved equipment and where it is obtainable.
3. Installation supervision by Becco.
4. Periodic inspection and permanent service.

Can you use this free Becco help, based on more years of experience with bulk handling of H_2O_2 than any other manufacturer? Use the coupon to let us know.

BECCO fmc

BECCO CHEMICAL DIVISION, FMC
Station B, Buffalo, New York
Dept. PP-B

Gentlemen:
Please tell me more about your Four-Fold Engineering Service.

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FIRM_____

ADDRESS_____

CITY_____

ZONE____ STATE_____

TECHNICAL BULLETINS

We got 'em—
You can have 'em!
They're FREE!

Years of experience in paper and pulp processing have produced a library of technical information which is available in individual bulletins, free on request. Use the coupon below to let us know which you'd like to receive.

- **No. 31 — Groundwood Bleaching Variables — A Statistical Approach.**
- **No. 32 — H_2O_2 Bleaching of Chemicals and Mechanical Pulps.**
- **No. 47 — Peroxide Bleaching of Pulps.**
- **No. 48 — High-Density Pulp Bleaching.**
- **No. 64 — Development Studies on Last-Stage H_2O_2 Bleaching of Alkaline Pulps.**
- **No. 65 — Peroxide Bleaching of Southern Pulps.**
- **No. 66 — Becco Laboratory Procedures for Pulp Bleaching, 1955 Ed.**
- **No. 91 — Peroxide Bleaching of Chemi-Mechanical Hardwood Pulps.**
- **No. 92 — Peroxide Bleaching of Chemical Pulps.**

BECCO fmc

BECCO CHEMICAL DIVISION, FMC
Station B, Buffalo, New York

Dept. PP-G

Gentlemen:
Please send me a copy of each of the following bulletins:

— — — — — — — —

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CITY_____

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New Cold Caustic Bleach Process

Looking for a way to use greater amounts of low-cost, more plentiful pulp—without capital investment for bleach equipment? Then let a Becco Sales Engineer show you our new technique* which allows you to bleach in the same equipment regularly used for the manufacture of cold caustic pulp.

In this new process, peroxide bleach liquor is added at the Bauer Refiner, and bleaching occurs during the refining operation. Bleach response depends on refiner densities.

Up to 20 points brightness increase has been obtained in commercial operations to date, and with no additional steam costs, no holding time, and no excessive chemical costs.

Becco can assist you immediately in setting up a production run and evaluating results. First step: use the coupon to let us know you're interested.

*—Patent Pending

BECCO fmc

BECCO CHEMICAL DIVISION, FMC
Station B, Buffalo, New York

Dept. PP-H

Gentlemen:
Please have a Sales Engineer give me more information on Becco's Cold Caustic Bleach Process.

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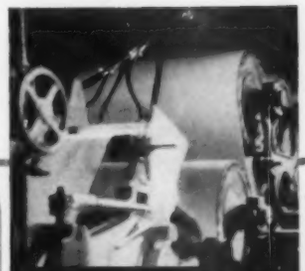

How BRIGHT Is BRIGHT?

That's a hard question to answer. It depends on how the pulp is treated.

Trouble is, paper can show an 86 level at the layboy, but by the time the paper is delivered, this has dropped to 82 or lower. With conventional bleaching methods, that is.

Many chemical pulp producers have found the answer to this problem in Becco's Dryer Steep Bleaching Process (patented, but licensed perpetually for one buck). Applied by means of spray pipes across the pulp sheet ahead of the dryers, Becco Hydrogen Peroxide increases brightness permanence and bleaches in transit. Often, in fact, an 86 layboy level improves to 88 by delivery time.

This is just one example. Becco has a vast amount of technical knowledge compiled from 31 years of experience with all types of pulp. If you'd like help with your pulp, free of any obligation, let us know with the coupon below.

BECCO fmc

BECCO CHEMICAL DIVISION, FMC
Station B, Buffalo, New York

Dept. PP-C

Gentlemen:
We would like help with our pulp. Please have a Becco Sales Engineer call.

NAME_____

FIRM_____

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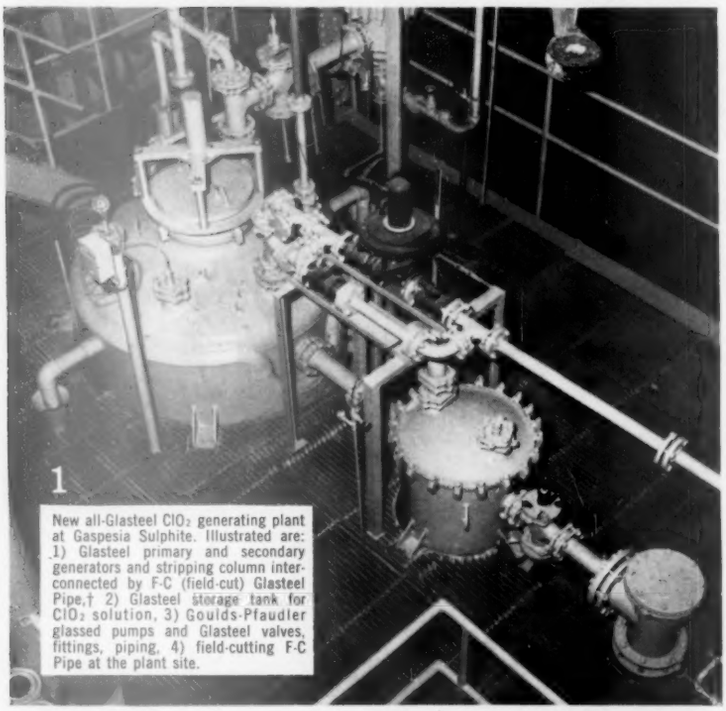
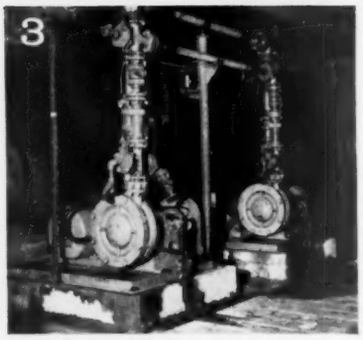
FLUIDICS* AT WORK



New all-Glasteel ClO_2 generating plant at Gaspesia Sulphite. Illustrated are: 1) Glasteel primary and secondary generators and stripping column interconnected by F-C (field-cut) Glasteel Pipe,† 2) Glasteel storage tank for ClO_2 solution, 3) Goulds-Pfaudler glassed pumps and Glasteel valves, fittings, piping, 4) field-cutting F-C Pipe at the plant site.



How to keep "puffs" down in generating ClO_2

Only two "puffs" since going on stream in November 1959. That's the record of the chlorine dioxide plant operated by Gaspesia Sulphite Company Ltd., Chandler, Quebec.

One of the important features of the "puffless wonder" is the extensive use of Pfaudler® Glasteel equipment — glass inside, steel outside.

Combat corrosion. With Glasteel you can not only keep "puffs" to a minimum, but also solve *all the corrosion problems* encountered in making and storing chlorine dioxide.

If you desire, you can get (as did Gaspesia) Pfaudler Project Engineering service to assist in the design of a complete "package" — primary and secondary generators; chlorate, chlorine dioxide, chemical, and waste liquor storage; scrubber, absorber, and stripper columns; pumps; piping; and instrumentation.

In wide use. You will find Pfaudler Glasteel equipment for ClO_2 generation used in 39 other progressive pulp mills. And always for the same reason: it is the most *economical* material available in terms of cost, maintenance and service life.

More information. For details on design, complete engineering, procurement, and installation of ClO_2 generating systems, write to our Pfaudler Division, Department PP-60, Rochester 3, New York.

*FLUIDICS is the Pfaudler Permutit program that integrates knowledge, equipment and experience in solving problems involving fluids.

PFAUDLER PERMUTIT INC.

Specialists in FLUIDICS...the science of fluid processes

†Patent applied for

B. R. CHRISTENSEN

Beloit Eastern's "Bud" Hammill

In 23 years' association with the paper industry, B. L. ("Bud") Hammill has covered a wide range of mill problems and developed a keen sense of production needs. As Beloit Eastern's sales manager, he co-ordinates orders and plant output, keeps abreast of newest developments. Beloit Eastern representatives are constantly alert to serve you in the most effective manner possible. Their prime considerations are your specific requirements for finished product processing equipment. Call on these men—you'll be pleased with their recommendations.

FINISHED PRODUCT PROCESSING EQUIPMENT

Winders • Petite Winders • Slitters
Supercalenders • Roll Wrappers
Roll Lowering Tables • Roll and Shaft
Handling Equipment • Conveyors
Unwind Stands and Tru-Tension
Controls • and other equipment for
the paper and allied industries.

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BELOIT EASTERN CORPORATION
DOWNINGTOWN, PENNSYLVANIA

Member Beloit Group

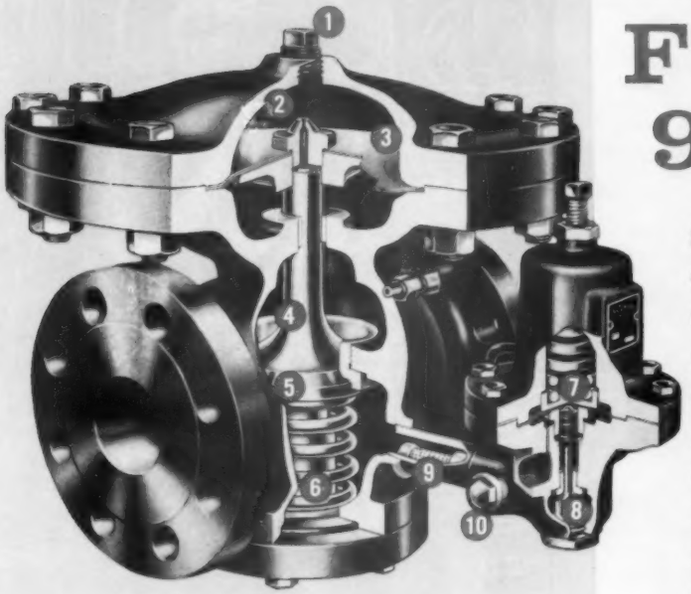
How to keep "Turkey Tracks" off your sheet

Whether turkey tracks, hen tracks, orange peel—whatever term you use to describe these imperfections, remember this: Ethylex Gums produce superior surface sizings almost free of patterning. Exceptionally strong film-forming characteristics and self-leveling flow properties assure uniform distribution of size. Ethylex Gums control penetration, improve gloss ink hold-out.

A.E. STALEY MFG. CO.
Decatur, Illinois

ATLANTA • BOSTON • CHICAGO • CLEVELAND • KANSAS CITY • NEW YORK • PHILADELPHIA • SAN FRANCISCO • ST. LOUIS

No Clogged Orifices – No Sticky Valves
No Diaphragm Rupture install the improved



FISHER 92B STEAM REDUCING VALVE

1. Pipe plug directly over bleed orifice for cleaning ease
2. Bleed orifice designed to reduce plugging
3. Stainless steel diaphragms for maximum strength
4. One-piece stainless steel inner valve and stem
5. Stainless steel seat ground at 60° angle
6. Inconel valve spring resists corrosion
7. Bellows seal eliminates pilot valve sticking
8. Pilot valve seat of hardened stainless steel
9. Removable strainer to protect pilot valve seat
10. Pipe plug for easy strainer flushing

Now Available in Tough High Strength Nodular Iron For Pressures Up To 300 psi

Here's a pilot operated, pressure reducing valve designed to minimize problems inherent in steam service. Fisher 92B is a completely self-contained unit. It is especially desirable for use where air or gas is not available as an operating medium.

Once installed the 92B is easily maintained. The bleed orifice can be cleaned by removing one fitting.

PRESSURE RATINGS AND SIZES

Body Material	Working Pressures	End Connections	Body Sizes
IRON	250 psi @ 410°F	Screwed	½"–2"
	125 psi @ 360°F	125 lb. flgd.	1½"–6"
	250 psi @ 410°F	250 lb. flgd.	1½"–6"
NODULAR IRON	300 psi @ 450°F	Screwed	½"–2"
	150 psi @ 366°F	150 lb. flgd.	1½"–3"
	300 psi @ 450°F	300 lb. flgd.	1½"–3"

The inner valve, seat ring and main spring can all be reached through the blind flange. The 92B reduces inlet pressures up to 300 psi down to outlet pressures from 2 to 150 psi. Precision construction of the pilot gives the valve exceptionally close accuracy.

NODULAR IRON CONSTRUCTION

The 92B is now available in Type 60-45-15 Nodular (ductile) iron (ASTM No. A395-56T). This extremely tough, high strength iron can be cast into the intricate shapes of the 92B and still retain full strength and pressure tightness. In addition Nodular iron resists corrosion, extreme heat and thermal shock. Precision machining plus rugged Nodular iron construction adds up to this notably improved version of the time-tested 92B.

WRITE TODAY FOR FULL DETAILS
ASK FOR BULLETIN D-92B

IF IT FLOWS THROUGH PIPE ANYWHERE IN THE WORLD...CHANCES ARE IT'S CONTROLLED BY...

FISHER GOVERNOR COMPANY

Marshalltown, Iowa / Woodstock, Ontario / Rochester, England

BUTTERFLY VALVE DIVISION: CONTINENTAL EQUIPMENT COMPANY, CORAOPOLIS, PA.

FISHER® Controls

SINCE 1880

PRODUCTS and SERVICE...

KEOGEL Pregelatinized—ready to use—beater starch.

KEOTAC Cationic—effective—economical wet end additive.

KEOZYMES Enzyme converting starches for sizing and coating adhesives.

KEOCLORS Oxidized starches—complete line for sizing and coating adhesive application.

KEOGUM A new line of corn starch derivatives for sizing and coating adhesive application.

KEOFILMS Economical—controlled viscosity thinboiling starches for special sizing applications.

to meet your changing needs

Mistakes are costly. That's why you'll want to rely on Hubinger products and field service. For over three-quarters of a century, we've been developing, testing, and manufacturing starches and adhesives—always looking for new and better products. And, these products are serviced by trained field personnel, men who can help you solve the most complicated starch and adhesive problems. If your mill needs new starch products to meet special specifications, let our nearby Hubinger paper-starch technical service representative help you. You can depend on him—and Hubinger products—to meet your changing needs and do so economically.
Just phone or write us.

THE HUBINGER COMPANY / *Keokuk, Iowa*

New York • Chicago • Los Angeles • Boston • Charlotte • Philadelphia

"Reliance V★S Drive provides 60-second acceleration and precise tension control of Cameron winder

H. E. Stebner, Paper Application Engineer, Reliance Electric & Engineering Co.

"At speeds of 6,000 FPM, one of the keys to precise tension control of newsprint is electrical regenerative braking on the unwind stand. A Reliance D-c. motor powering the unwind roll acts as a drag generator, maintaining critical tension.

"For normal stopping, positive controlled deceleration is provided by regenerative braking in less than 60 seconds. Emergency stopping is a combination of dynamic and mechanical braking to provide fastest possible stopping. A VSR Regulator system controls the unwind tension, continuously compensating for WR^2 and taper tension. Another VSR Regulator holds over-all winder speed constant.

Now in use at Southland Paper Mills, Inc., Lufkin, Texas, the Cameron Winder has a capacity for a 248" mill roll, 74" in diameter, and weighing 3300 pounds. Reliance Drive equipment requires only minor maintenance, with practically no downtime caused by drive failure . . . and a uniform, high quality paper product is the result.

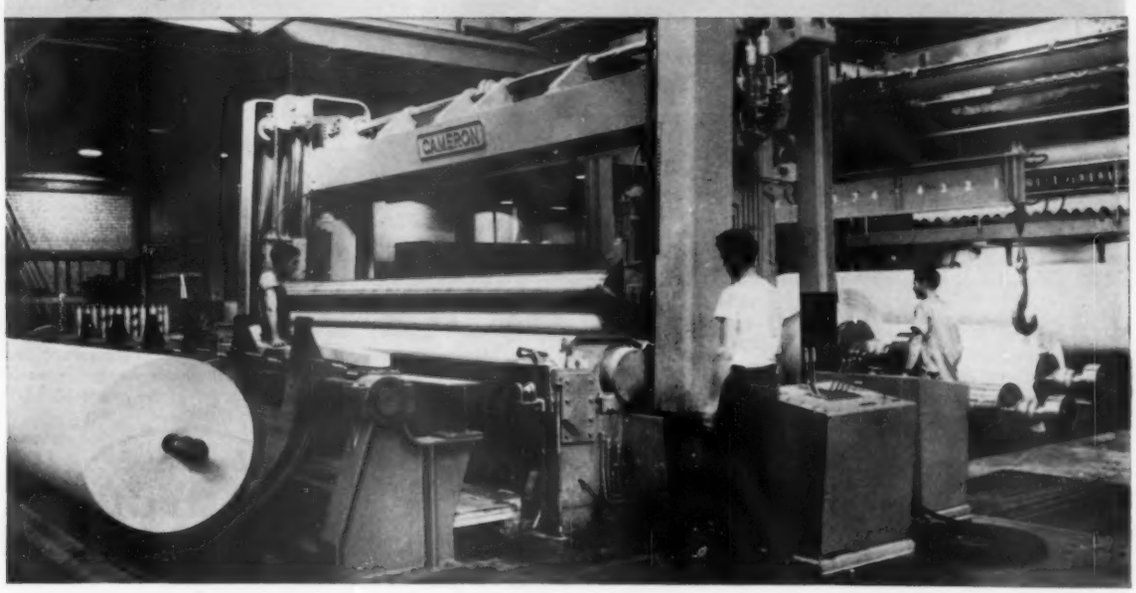
Reliance Sales Engineers are ready to apply their application skills to your drive problems. Call your nearest Reliance office or write for further information. L-1884

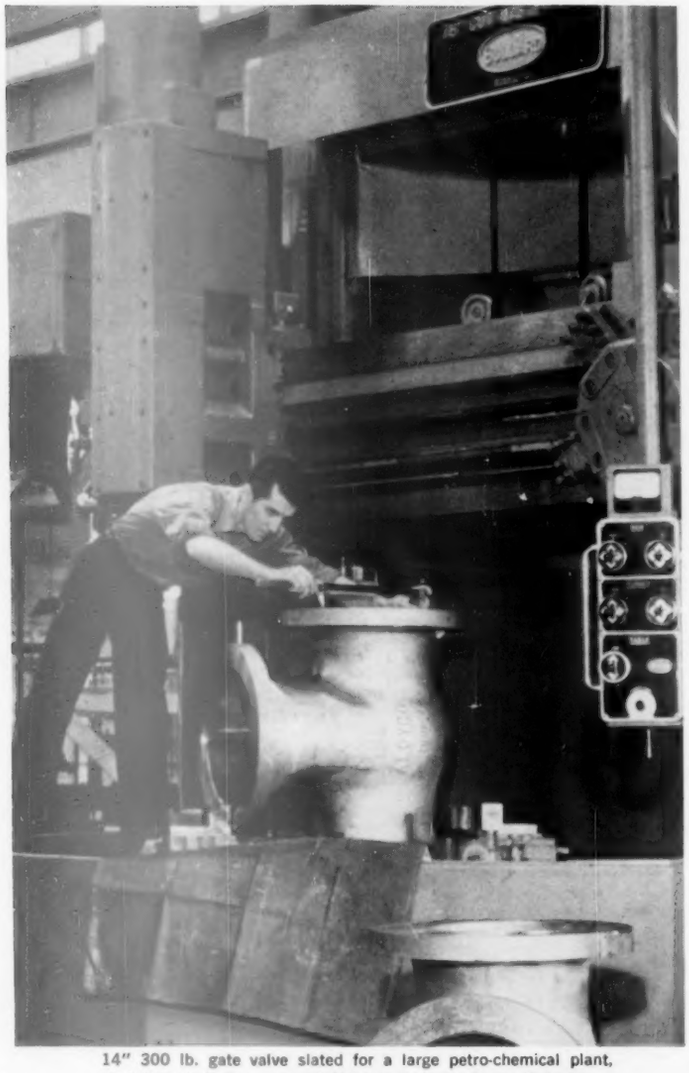
Product of the combined resources of Reliance Electric and Engineering Company and its Master and Reeves Divisions

RELIANCE ELECTRIC AND ENGINEERING CO.

DEPT. 186A, CLEVELAND 17, OHIO
Canadian Division: Toronto, Ontario
Sales Offices and Distributors in Principal Cities

Duty Master A-c. Motors, Master Gearmotors, Reeves Drives, V★S Drives, Super 'T' D-c. Motors, Generators, Controls and Engineered Drive Systems.





14" 300 lb. gate valve slated for a large petro-chemical plant, is being worked on one of Aloyco's battery of new Bullards.

Advanced machines... tools...test facilities expand Aloyco Valves' range of service

Constant change and improved techniques in modern fluid handling, pose a real challenge for valve manufacturers.

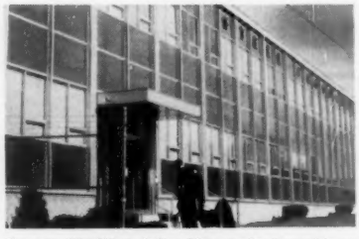
To meet these demands, Aloyco is constantly adding new facilities, some of which are pictured here.

For example, Aloyco Stainless Steel Valves are now available in sizes up to 24", pressures up to 2,500 lbs. at 650°F.

While these new facilities have improved and expanded the quality and usefulness of our entire line, they are particularly important, for example, in the manufacture of valves for the nuclear and missile fields.

For advanced knowledge and ideas plus the equipment to carry them out—take your next valve problem to the specialists: Alloy Steel Products Company, **1316** West Elizabeth Avenue, Linden, New Jersey.

One of finest hot test loops in the nation checks out valves at up to 2500 psi, 650°F. Hot tests can spot trouble that would otherwise be revealed only after months of line service.



New multimillion dollar Aloyco plant combines new production tools, test facilities, sales, administration, research and development offices and labs into single integrated unit.

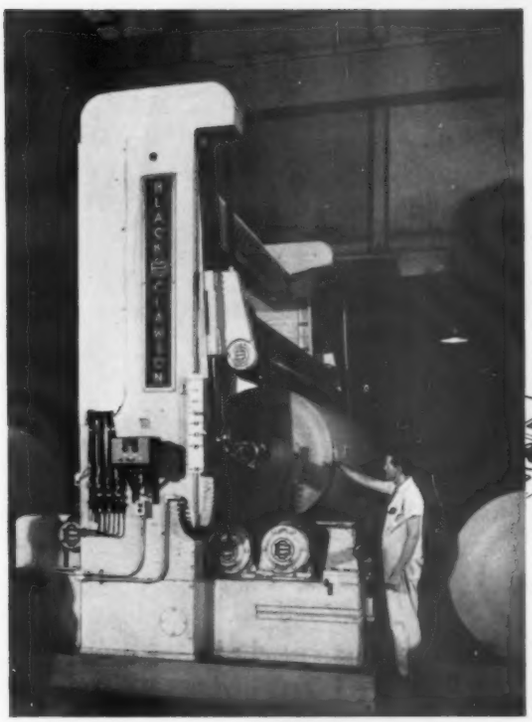
Boroscope examination (in pressurized clean room) of specially made nuclear valves follows the application of dye penetrant.

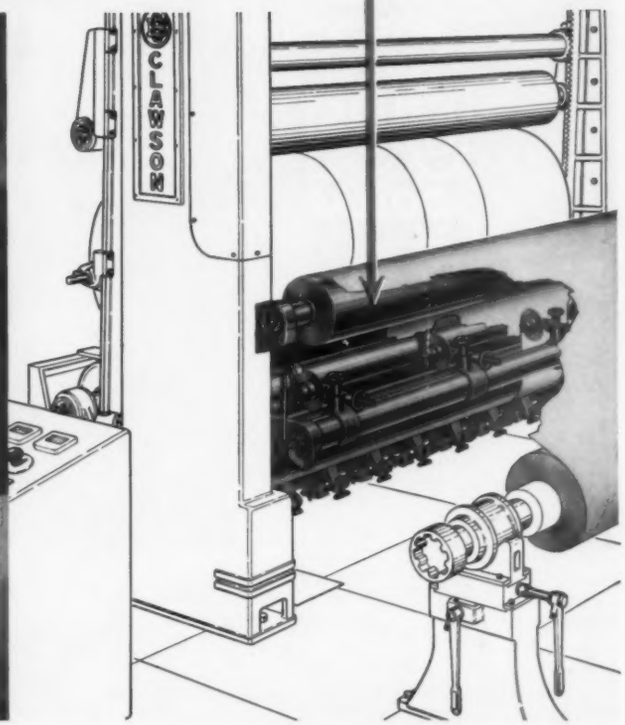
ALLOY STEEL PRODUCTS COMPANY

LINDEN, NEW JERSEY

Boston • New York • Wilmington • Atlanta • Birmingham • Baton Rouge • Buffalo
Pittsburgh • Chicago • St. Louis • San Francisco • Los Angeles • Seattle

Hi-Speed **Rollflyte Winders** *with new* **Verti-Shear***





*Verti-Shear... a new vertical slitting method designed to make Rollflyte winders more productive and easier to operate, has several obvious advantages.

- Shorter draw from point of slit to point of wind
- Slitters and adjustable spreader bar are readily accessible to the operator
- Minimum downtime for maintenance
- Standard commercial parts—bearings, sprockets, air cylinders, etc.

Rollflyte mill winders have heavy box framing that dampens vibration and adds stability. Rotating members are properly sized for minimum deflection and balanced for speeds in excess of operating speeds.

These modern winders can be equipped with roll ejector, air-operated rewind shaft, lowering table, rewind shaft core holder and puller, control console and constant tension control.

Furnished in eight sizes with rewind capacities from 48" to 84" dia., trim width to suit your machine. Write for Bulletin 23-DM

The Black-Clawson Company
Slitter-Winder Dept., Fulton, N. Y.

Another Advanced Engineering Design

BLACK-CLAWSON

Your nearby Sonoco core specialist offers personalized service...

Here's qualified assistance with your core problems from men who represent a company with over 60 years' experience in the field. They are located in each of SONOCO's coast to coast plants.

• SONOCO experience is coupled with research, and the result is found in the high quality and dependable service of the cores produced today. SONOCO cores are made to exacting torque and crush strength specifications in a completely integrated manufacturing operation. Quality is rigidly controlled from start to finish. Non-returnable cores; in all sizes. Returnable cores, with or without famous SONOCO metal ends, are made in all standard sizes. SONOCO can also supply a complete line of metal end core machinery and core cutters.

Regardless of your core needs, you'll get more for your core dollar from SONOCO in service, quality and economy. Call or write today!

SONOCO
Paper Mill Cores
SONOCO PRODUCTS COMPANY

Main Office—Hartsville, S. C. • Mystic, Conn. • Lowell, Mass.
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CREATED . . . FOR ECONOMY AND VERSATILITY

WOODBERRY SUPER 887

Asbestos and Synthetic Reinforced Dryer Felt

A highly effective combination of both asbestos and synthetic fiber reinforcement gives WOODBERRY SUPER 887 a higher margin of heat-resistance, a longer and more productive life. Count on this dryer felt for great stamina even when exposed to the most grueling hot spots. SUPER 887 has the potential for running in many positions where full-faced asbestos felts are currently being used. Considerably lower in cost than other asbestos and synthetic combinations and capable of long-term endurance in many of the toughest positions, WOODBERRY SUPER 887 offers the paper maker invaluable economy as well as performance. Chalk up on the credit side the smooth face of SUPER 887 that insures finer finished paper . . . the versatile character of SUPER 887 that makes it suitable for a wide range of paper-making applications . . . and conclude with a dryer felt that promises superiority in almost every area . . . WOODBERRY SUPER 887!

MOUNT VERNON DRYER FELT FAMILY — WOODBERRY SUPER 887 is just one of Mount Vernon's full "family" of scientifically designed dryer felts. There's an individual felt for virtually every paper machine position and every paper-making need.

Another Mount Vernon Dryer Felt Success Story . . .

One of the leading soda pulp producers consulted Mount Vernon engineers about a dryer felt problem that developed when they initiated a new process at their mills. They discovered that their new peroxide bleach process reduced the life-time of asbestos-and-cotton combination felts in use, to an average span of approximately twenty-five days. WOODBERRY SUPER 887 was recommended. Result: WOODBERRY SUPER 887 stayed on the job, during its first run, for 69 days, yielding an increased dryer felt life in excess of 175%.

UNFORMITY Makes The Big Difference In Industrial Fabrics

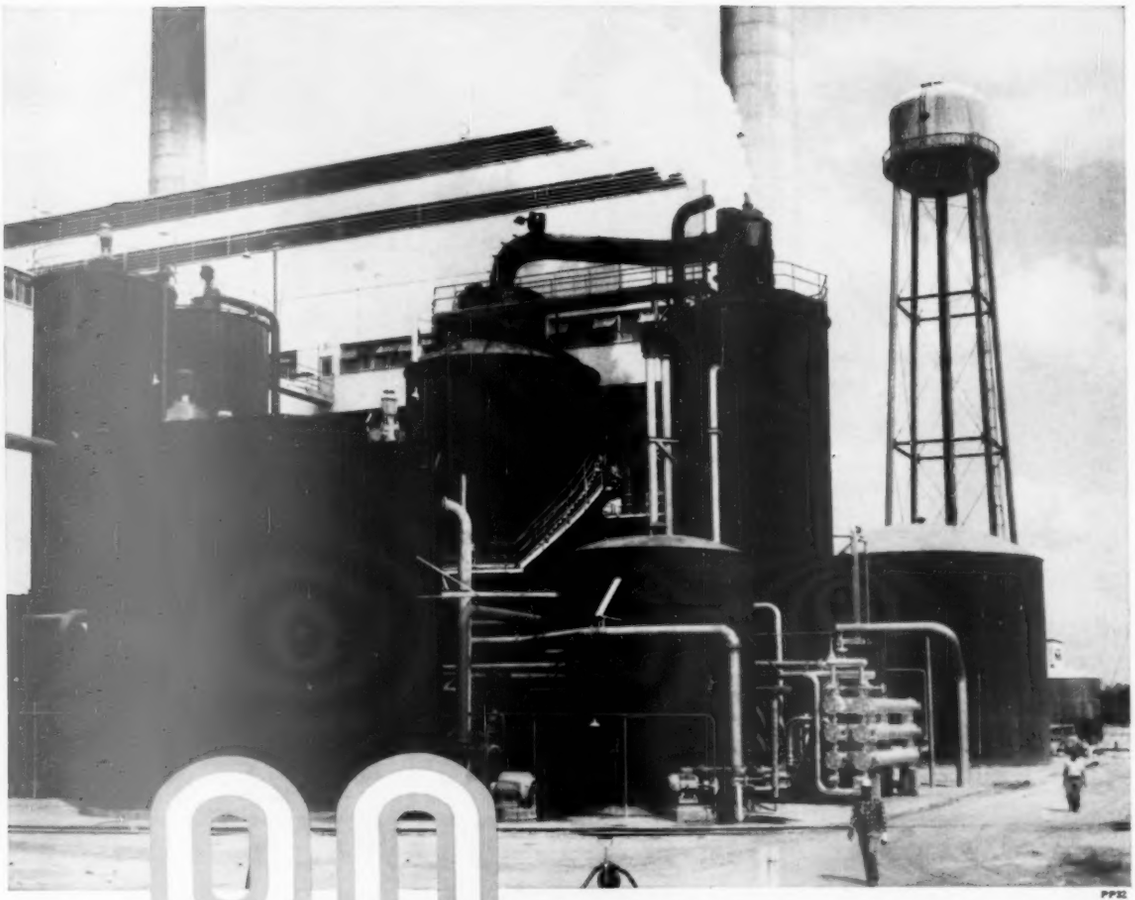
Mount Vernon Mills, inc.

A LEADER IN INDUSTRIAL TEXTILES

TURNER HALSEY COMPANY

SELLING AGENTS

Main Office: 40 Worth Street, New York, N. Y.



80 CB&I-built structures serve Rayonier in Georgia

Providing chemical wood cellulose is the principal job of two identical chemical mills that form the Jesup, Georgia division of Rayonier Inc. The adjacent plants can work as a unit on the same product or each can be operated independently on different products.

Rayonier's working equipment at Jesup includes more than 80 structures built by CB&I. Among them are a six-body sextuple effect stainless Horton-clad® black liquor evaporator, a 100,000 gallon elevated tank for water storage, several processing towers and a large number of storage tanks.

A bulletin describing CB&I's *coordinated services* and complete range of top-quality equipment for the paper and pulp mill industry is available. May we send you a copy?

CHICAGO BRIDGE & IRON COMPANY

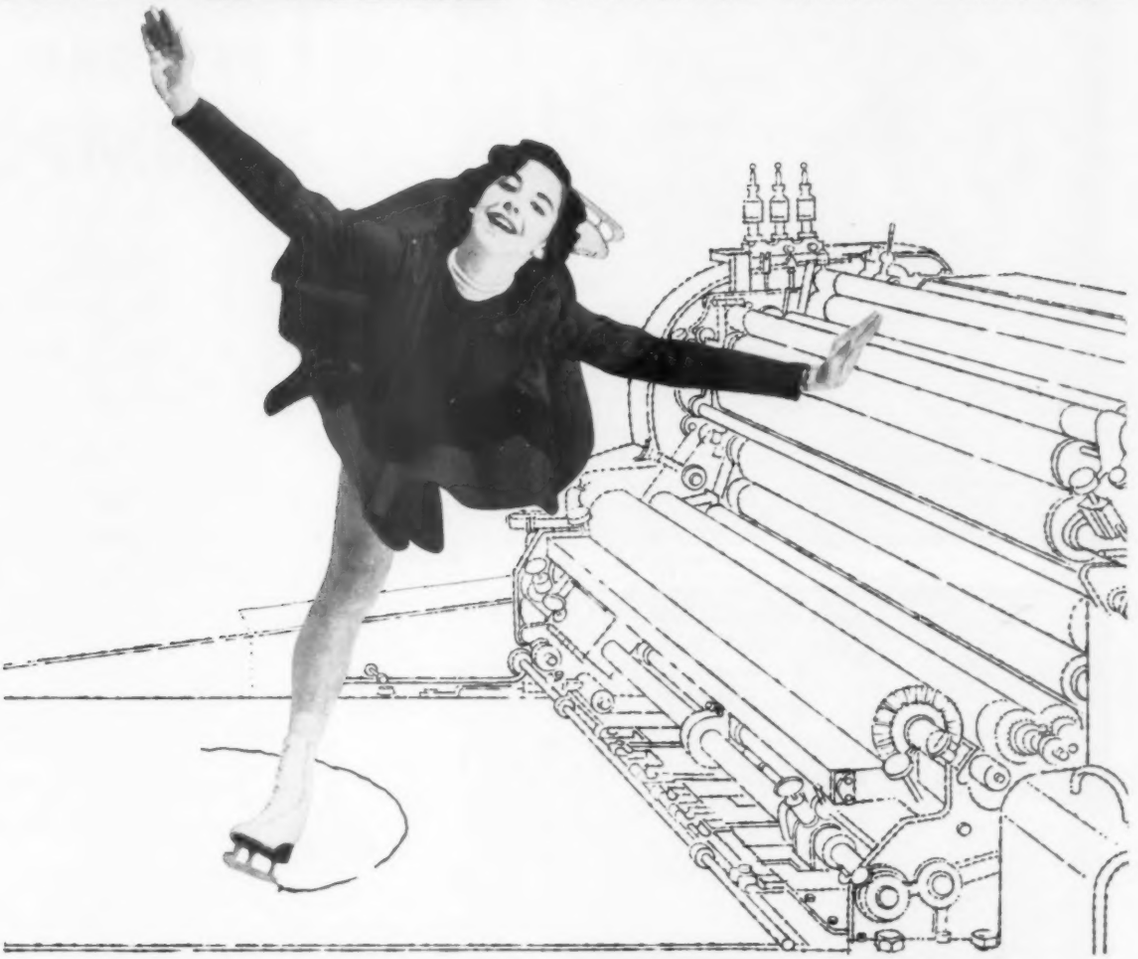
CBI

332 SOUTH MICHIGAN AVENUE
CHICAGO 4, ILLINOIS

OFFICES AND SUBSIDIARIES IN PRINCIPAL CITIES THROUGHOUT THE WORLD

Kofilm

ACETYLATED STARCH DERIVATIVE



FOR SURFACES "SMOOTH AS ICE"

An exaggeration?

Not much! Because KOFILM, our unique acetylated starch, makes a big difference in surface sizing results. Surfaces are actually smoother. With maximum print fidelity, better brightness, higher pick strengths and more uniform control of ink penetration.

KOFILM eliminates variations in viscosity and strength. It prolongs viscosity stability over extended periods of time. Performs cleanly in starch supply systems and on the paper machine. Offers high strength, more flexibility and excellent film forming properties. Improves oil resistance and wax holdout. And is an excellent pigment binder for coating applications.

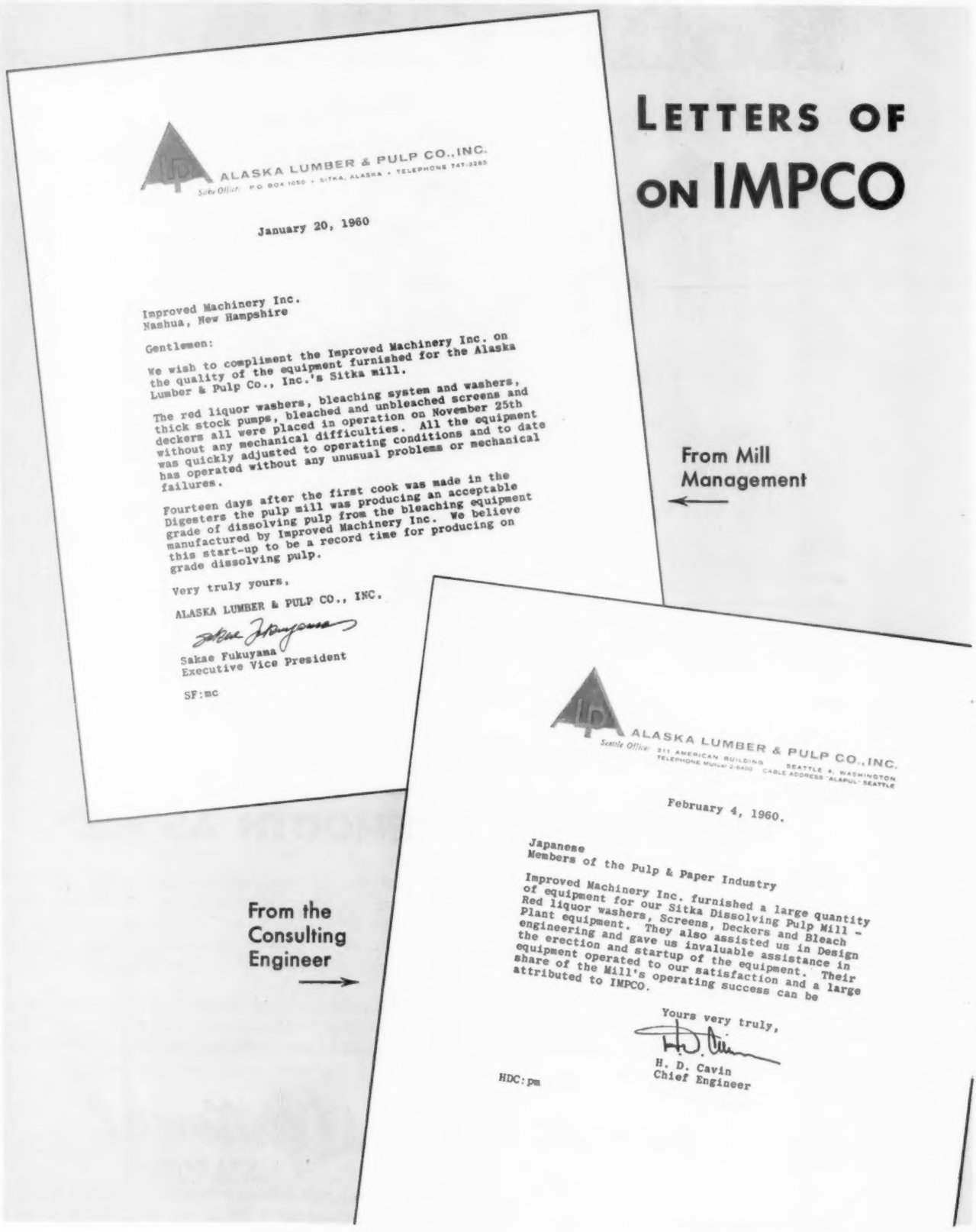
KOFILM is available in a range of viscosities. Why not compare it with whatever you're now using? Your nearest National office will be glad to work with you.

National STARCHES

NATIONAL STARCH and CHEMICAL CORPORATION

750 Third Avenue, New York 17 • 3641 So. Washtenaw Avenue, Chicago 32 • 735 Battery Street, San Francisco 11

LETTERS OF ON IMPCO



ALASKA LUMBER & PULP CO., INC.
Sitka Office: P.O. BOX 1050 • SITKA, ALASKA • TELEPHONE 747-3265

January 20, 1960

Improved Machinery Inc.
Nashua, New Hampshire

Gentlemen:

We wish to compliment the Improved Machinery Inc. on the quality of the equipment furnished for the Alaska Lumber & Pulp Co., Inc.'s Sitka mill.

The red liquor washers, bleaching system and washers, thick stock pumps, bleached and unbleached screens and deckers all were placed in operation on November 25th without any mechanical difficulties. All the equipment was quickly adjusted to operating conditions and to date has operated without any unusual problems or mechanical failures.

Fourteen days after the first cook was made in the Digesters the pulp mill was producing an acceptable grade of dissolving pulp from the bleaching equipment manufactured by Improved Machinery Inc. We believe this start-up to be a record time for producing on grade dissolving pulp.

Very truly yours,

ALASKA LUMBER & PULP CO., INC.

Sakae Fukuyama
Executive Vice President

SF:mc

From Mill Management

ALASKA LUMBER & PULP CO., INC.
Seattle Office: 311 AMERICAN BUILDING SEATTLE 4, WASHINGTON
TELEPHONE MAIN 2-8400 CABLE ADDRESS "ALAPUL" SEATTLE

February 4, 1960.

Japanese
Members of the Pulp & Paper Industry

Improved Machinery Inc. furnished a large quantity of equipment for our Sitka Dissolving Pulp Mill - Red liquor washers, Screens, Deckers and Bleach Plant equipment. They also assisted us in Design engineering and gave us invaluable assistance in the erection and startup of the equipment. Their equipment operated to our satisfaction and a large share of the Mill's operating success can be attributed to IMPCO.

Yours very truly,

H. D. Cavin
Chief Engineer

HDC:pm

From the Consulting Engineer

COMMENDATION IN ALASKA

Alaska Lumber & Pulp Co., Inc., Alaska's new 350 Ton Dissolving Pulp Mill produced world market acceptable high alpha pulp only fourteen days after its "on schedule" start-up!

Efficient management and clean modern mill design, in combination with Impco equipment in the pulping system, were factors in making this another record start-up.

Impco Equipment:

- Vibratory Knotters
- Red Liquor Washers
- Centrifugal Screens
- Tailings Screens
- Open Cylinder Deckers
- Mechanical Bleach Equipment for seven stages
- Bleach Washers

IMPCO

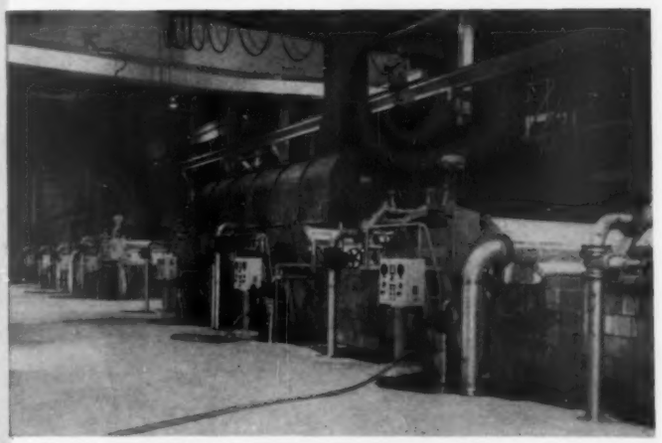
IMPROVED MACHINERY INC.

Nashua, New Hampshire

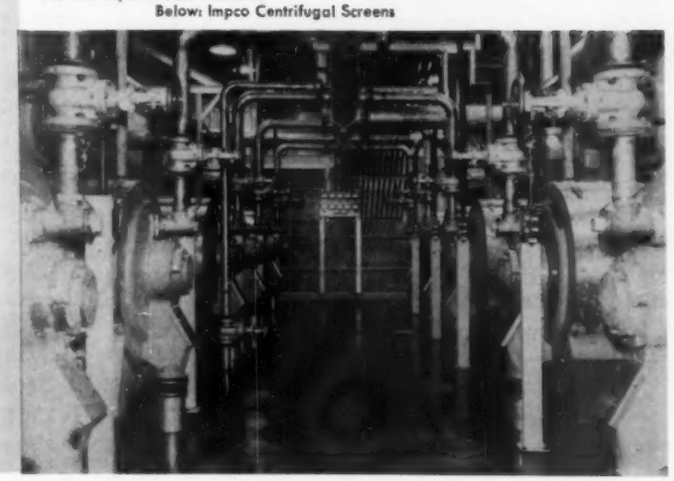
In Canada: Sherbrooke Machineries Limited
Sherbrooke, Quebec

In Europe: Sunds Verkstader ab
Sundsbruk, Sweden

Alaska Lumber & Pulp Co., Inc.



Above: Impco Bleach Washers
Below: Impco Centrifugal Screens



White carton makes a beautiful picture

The natural color and texture of luscious fruit contrast strikingly with the bright white background of corrugated kraft. So do product, company identification, and brand name when carried as part of this "new look."

That's why the shipping carton is becoming more than just a container to carry the goods to market. In sparkling white, it attracts attention in shipment—and at the end of the line where sales are made.

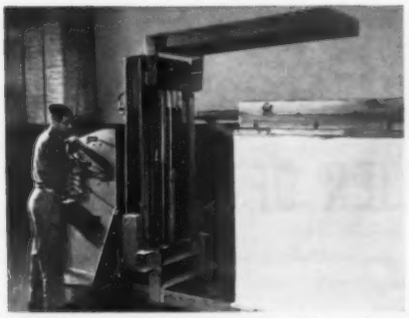
It takes proper increase of TITANOX® white titanium dioxide pigment in coatings and liners to obliterate drabness and truly present the new look that affords sharp contrast for merchandising messages.

To help you gain the full benefits of white pigmentation is our most important job. This applies to *all* types of paper which depend on titanium dioxide white pigments for just the right combinations of whiteness, brightness, and opacity. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; offices and warehouses in principal cities. In Canada: Canadian Titanium Pigments Ltd., Montreal.

TITANIUM PIGMENT CORPORATION
SUBSIDIARY OF NATIONAL LEAD COMPANY

TITANOX

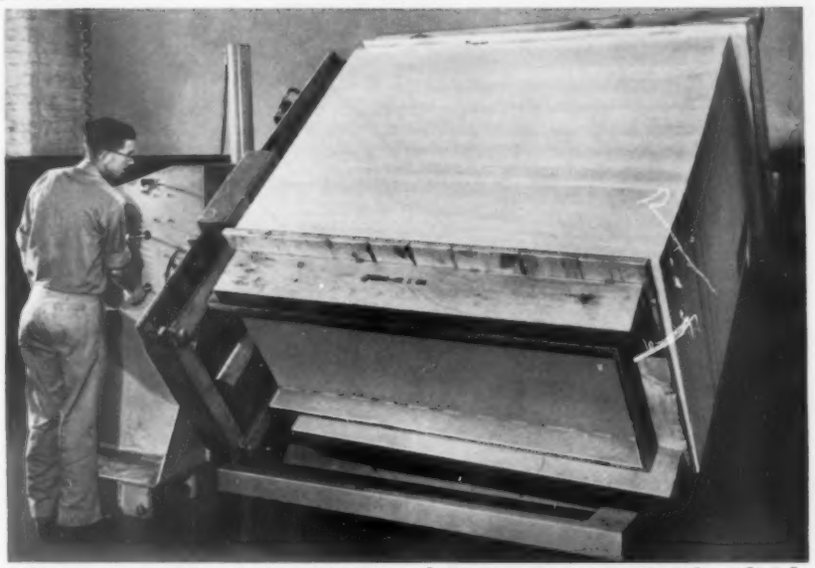
7207-C



1. Travels under its own power to the skid, inverts on-the-spot in seconds.

NEW SOUTHWORTH SKID TURNER

IT TAKES JUST *ONE* MAN LESS THAN *ONE* MINUTE



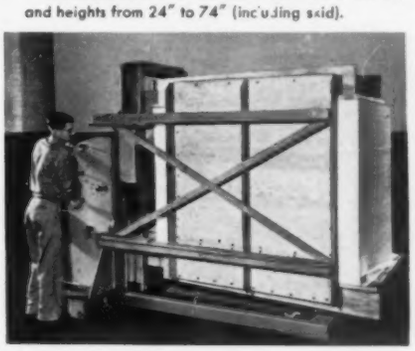
2. Eliminates the possibility of squeeze-induced wrinkling, offset or other damage.

3. Handles sheet sizes from 28" x 38" to 52" x 76", and heights from 24" to 74" (including skid).

SAVINGS*		
Old 2 man method	75 min.	$5.47
New 1 man method	15 min.	$0.55
Savings* per skid	60 min.	$4.92

Production	Daily	Yearly
10 skids	$ 49.20	$12,792
20 skids	98.40	25,584
30 skids	147.60	38,376

Labor-Time recovered for reassignment



The actual inverting cycle, itself, is 55 seconds . . . the complete operating cycle, from pick-up to delivery, only 15 minutes. But recovered Labor-Time is only half the story. More accurate trimming of wavy or bulky stock, more compact and uniform stacking (felt *or* wire side up), less handling damage and easier skid-to-pallet transfer, all mean additional economies . . . lowered costs through greater efficiency which are well worth more thought in terms of *your* finishing room.

SOUTHWORTH MACHINE CO. since 1890

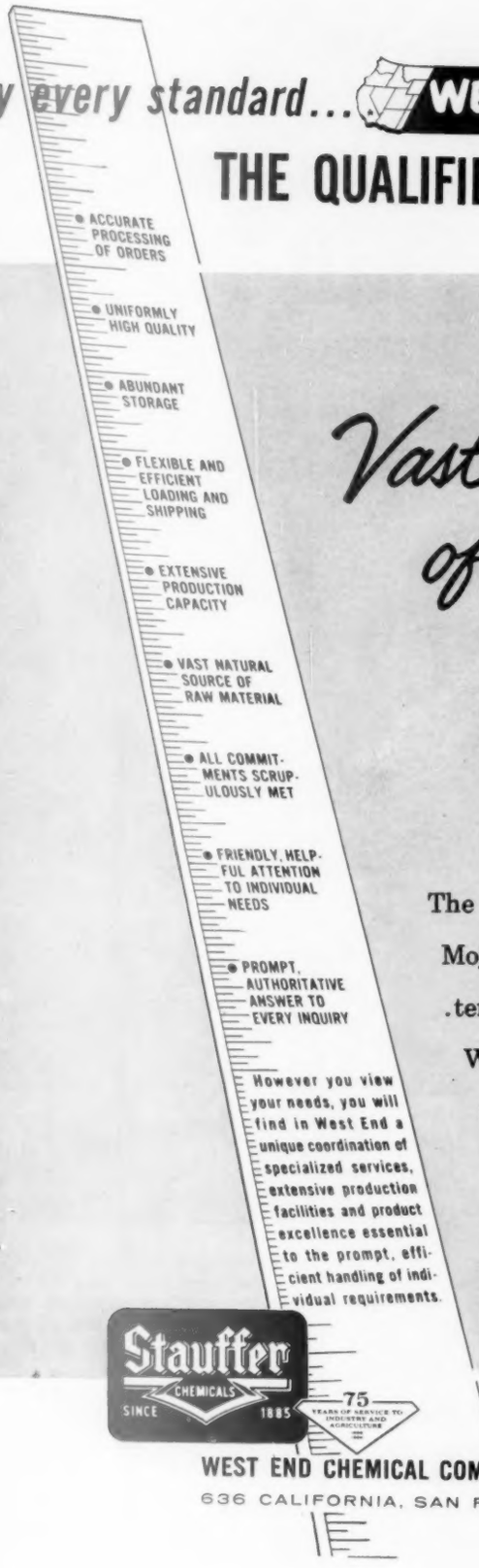
For Details Write or Call Direct:

SOUTHWORTH MACHINE CO.

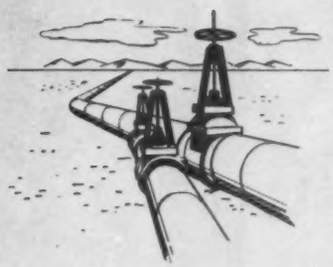
628 WARREN AVENUE, PORTLAND, MAINE, SPruce 4-1424

Paper Conditioners; Automatic Carton Sealer; Lift Tables; Air Flotation Tables; Skid Turners; Hand, Foot, Motor Driven Punching Machines; Humidifiers; Envelope Presses; Punch Heads; Tabbing Knives; Corner Cutters; Custom Built Equipment.

By every standard... WEST END MEASURES UP AS THE QUALIFIED SUPPLIER OF SALT CAKE


• ACCURATE PROCESSING OF ORDERS
• UNIFORMLY HIGH QUALITY
• ABUNDANT STORAGE
• FLEXIBLE AND EFFICIENT LOADING AND SHIPPING
• EXTENSIVE PRODUCTION CAPACITY
• VAST NATURAL SOURCE OF RAW MATERIAL
• ALL COMMITMENTS SCRUPULOUSLY MET
• FRIENDLY, HELPFUL ATTENTION TO INDIVIDUAL NEEDS
• PROMPT, AUTHORITATIVE ANSWER TO EVERY INQUIRY
However you view your needs, you will find in West End a unique coordination of specialized services, extensive production facilities and product excellence essential to the prompt, efficient handling of individual requirements.

Vast natural source of raw material



The dry bed of Searles Lake in California's Mojave Desert, one of the world's most extensive deposits of inorganic salts, provides West End with a vast, continuing source of raw material to meet every current and long-term requirement.

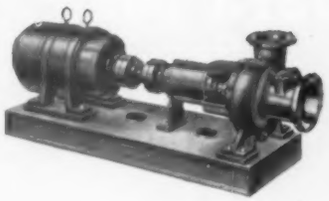
Stauffer CHEMICALS SINCE 1885 — 75 YEARS OF SERVICE TO INDUSTRY AND AGRICULTURE

WEST END CHEMICAL COMPANY • DIVISION OF STAUFFER CHEMICAL COMPANY

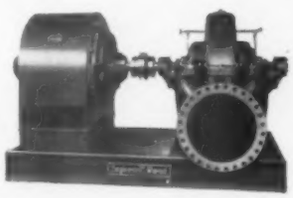
636 CALIFORNIA, SAN FRANCISCO 8, CALIF. • PLANT: WESTEND, CALIF.

PUMPS MEAN RELIABILITY
for the pulp and paper industry

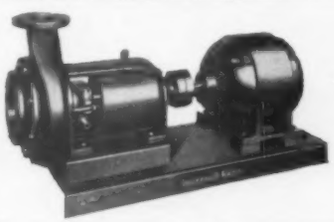
STOCK PUMPS feature the patented diverging-type impeller in classes EL, EM and EH. This unique design will handle paper stock heavily entrained with air—where other ordinary stock pumps will fail. In addition, the special impeller has handled various types of stocks from 7% to 8% consistency without the aid of a mechanical feed! Over 10% stock has been pumped with a screw-feed arrangement on the suction. For lower stock consistencies and where there is no air problem, classes CL, CM and CH pumps having a conventional impeller can be furnished. For all classes—heads: To 225 ft; capacities to 7000 gpm; sizes 4, 6, 8, 10, 12 inches.



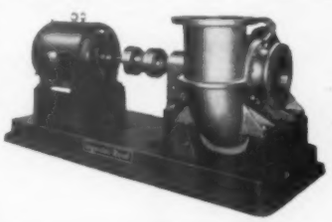
FAN PUMPS of single-stage, double-suction design are ideal for handling comparatively large volumes of liquids at low and medium heads. These pumps may be driven by any type of prime mover, and embody thoroughly modern design features that increase efficiency, insure reliability and lower maintenance costs. Capacities to 60,000 gpm.



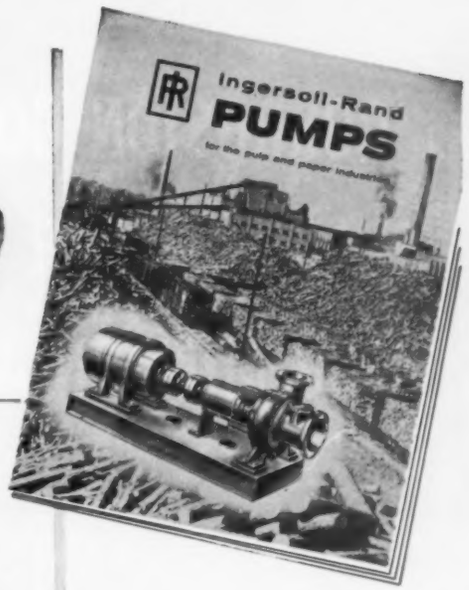
CHEMICAL PUMPS are offered in a complete line for handling hot and cold acids and alkalis. They are single-stage units of end-suction design that are ruggedly constructed to last longer on the job. For handling highly corrosive liquids, these pumps are built of IRCAMET, a high nickel-chromium-molybdenum alloy steel that is corrosion resistant. Heads to 200 ft; capacities to 4000 gpm.



MIXED AND AXIAL FLOW PUMPS have a simplified construction that means fewer parts and less maintenance. Mixed-flow BPM propeller type is specifically designed to deliver large capacities at moderately low heads. Class APL axial-flow pumps are specially designed for handling large volumes at low heads. For both classes—heads to 40 ft; capacities to 20,000 gpm.



BOILER-FEED AND DEBARKING PUMPS come in three types, each with symmetrical case and Unit-Type rotor design for easier maintenance and better operation. CNTA pumps are horizontally-split units available in 1-1/2, 2, 2-1/2 and 3 inch sizes. Capacities to 700 gpm; pressures to 1000 psi. HMTA pumps are horizontally-split units available in 2, 3, 4, 5 and 6 inch sizes. Capacities to 1600 gpm; pressures to 1200 psi. CHTA pumps are of "double-case" construction with vertically-split, forged steel outer casing. Available in 3 through 12 inch discharge sizes. Capacities to 7200 gpm; pressures to 6500 psi.

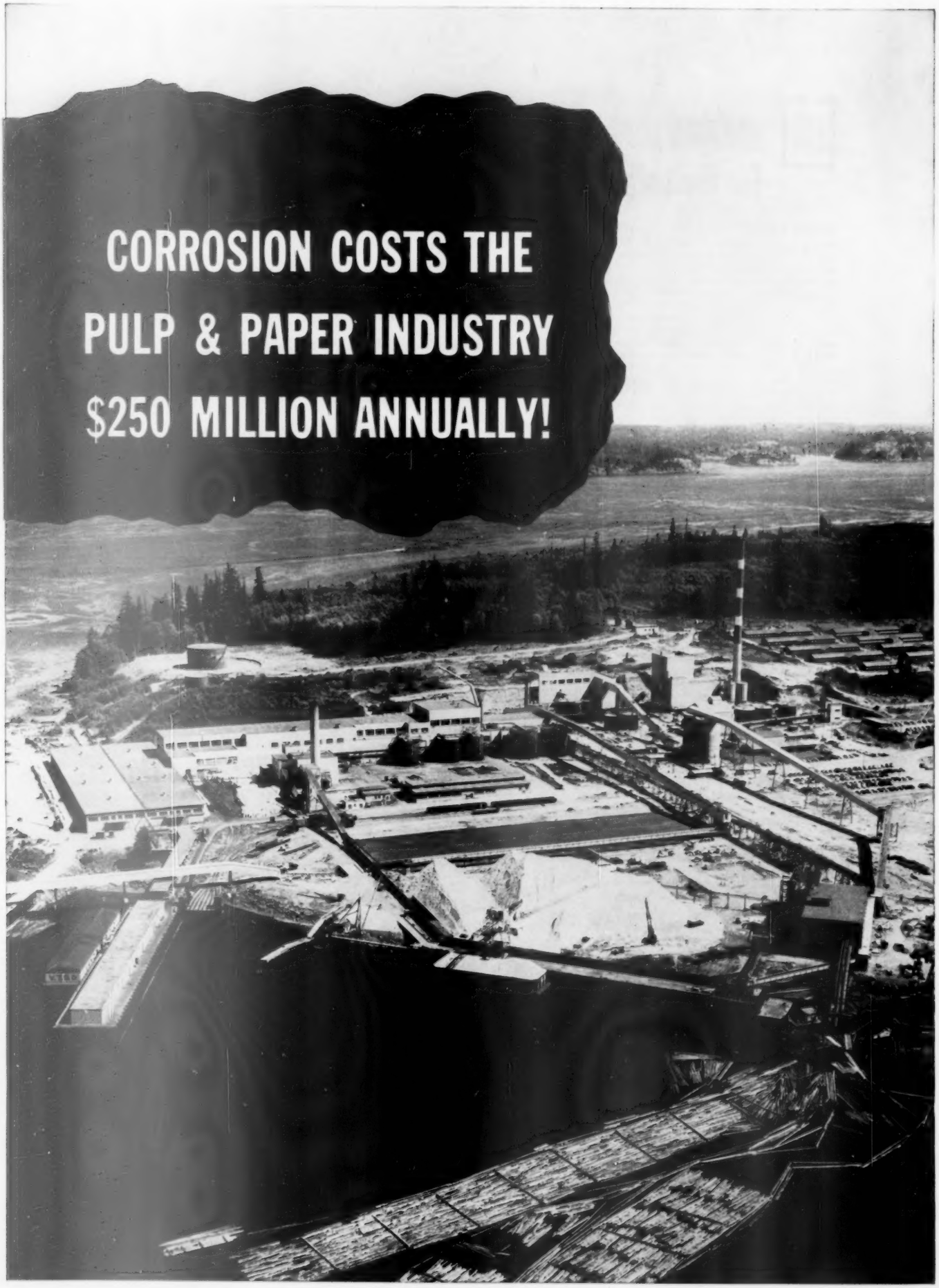


BULLETIN 7296 gives you further specifications and descriptions of all Ingersoll-Rand pumps for the pulp and paper industries. Its 24 pages are filled with cross-sections, data and installation photographs of I-R pumps at work in pulp and paper mills. For your copy of Bulletin 7296, contact your nearest I-R representative or write Ingersoll-Rand, 11 Broadway, N.Y. 4, N.Y.

VERTICAL PUMPS are designed to handle liquids at heads ranging from a few feet to many hundreds of feet. Heavy-duty construction and high efficiencies are featured. Pump lengths and discharge locations can be furnished to suit the application.

Ingersoll-Rand

10-971 **11 Broadway, New York 4, N.Y.**


CORROSION COSTS THE
PULP & PAPER INDUSTRY
$250 MILLION ANNUALLY!

Now You Can Control 96% of All Your Pulp & Paper Corrosion Problems with this Proven PITT CHEM® Coating System!

Corrosion conditions in the pulp and paper industry are among the most severe and varied in all of industry. The use of water as a "raw material," plus the employment of many chemical reagents, results in an annual corrosion loss of a quarter of a billion dollars annually in this vital and basic industry.

Today, more and more pulp and paper plant maintenance engineers are turning to the *complete* PITT CHEM System of protective coatings to reduce this loss effectively and economically. Service-proven PITT CHEM coatings are saving thousands of dollars every day, protecting expensive processing and manufacturing equipment against moisture and virtually every chemical corrosion condition which exists in pulp and paper plants.

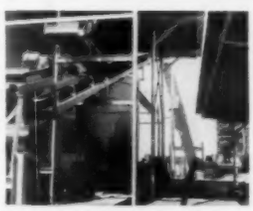
PITT CHEM Tarset, Tarmastic and Insul-Mastic are tough, *thick film* coatings that outlast conventional maintenance paints 10 to 20 times. You measure their protection in *decades*, not years. They can be cold-applied by brush, spray gun or roller. No other family of protective coatings can solve so *many* of your corrosion problems so *economically*.

For more information, mail the coupon below. Then consult your nearest PITT CHEM Distributor—he's listed in the "Yellow Pages." Or call Pittsburgh Coke & Chemical Company in Pittsburgh, New York, Chicago, Houston or Los Angeles. A PITT CHEM Corrosion Engineer will be glad to discuss your corrosion problems without obligation.

PITT CHEM TARSET®

Tarset, the original, patented coal tar-epoxy coating, is now solving some of the severest corrosion problems encountered in the pulp and paper industry. This revolutionary cold-applied coating is ideal for the protection of tanks, pipelines, slurry tanks and waste systems handling acids and alkalis.

PITT CHEM TARMASTIC®



PITT CHEM Tarmastic coal tar coatings are a series of coatings designed to solve a wide variety of corrosive conditions at moderate cost. They are ideal for the protection of structural steel, fan housings, cooling towers, air ducts and concrete, stone or masonry foundations.

PITT CHEM INSUL-MASTIC®

A series of high quality Gilsonite-asphalt mastics widely used for many years for economical protection against atmospheric corrosion. Recommended for "thick-coating" protection of storage tank exteriors and other metal structures. Insul-Mastic cork mastics provide good insulating qualities and condensation control.

PITT CHEM PIPELINE ENAMELS

PITT CHEM Coal Tar Pipeline Enamels protect oil and gas transmission and distribution lines throughout the United States. These proven, high quality enamels are geared to meet a wide variety of underground service conditions and are backed by experienced technical field service.

Send for Your Free Copy of this
PULP & PAPER CORROSION DATA FILE

Includes a survey of corrosion problems in the Pulp & Paper Industry, data on PITT CHEM Coating Systems and a coating selector guide.

Name_____ Title_____

Company_____

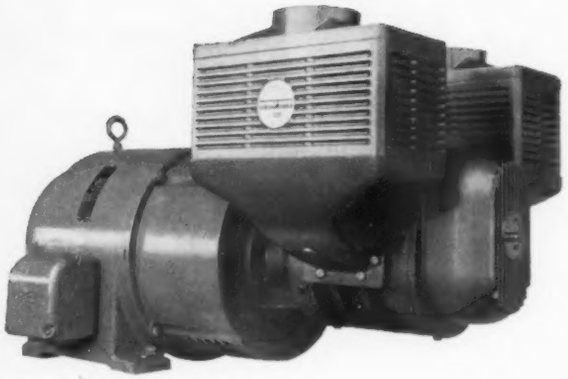
Street_____

City_____ State_____

PROTECTIVE COATINGS DIVISION
PITTSBURGH CHEMICAL CO.
GRANT BUILDING PITTSBURGH 19, PA.
A Subsidiary of PITTSBURGH COKE & CHEMICAL CO.

NEW SUTORBILT "88" ROTARY POSITIVE BLOWERS ARE LIGHTER . . . SMALLER . . . QUIETER

and so versatile in performance that just six models cover the range from 200 to 2200 cfm up to 15 psi



Brand New from Sutorbilt, Series "88" Rotary Positive Blowers pack oversize output in the most versatile line of light-weight, space-saving blowers available for high performance operation. Retaining such efficiencies as the 2-lobed counter-rotating impeller and the special Sutorbilt timing hub, these simple, rugged units feature:

High Strength, Heavy Duty Construction . . . increase service life, shrink blower size, insure low maintenance, peak performance.

Choice of Driving Methods . . . Locked bearings on both impeller shafts permit direct motor or V-belt drive. Availability of these new blowers as standard or gear head units furthers design possibilities, offers a wide range of ratios up to approximately 3 to 1.

More Mounting Possibilities . . . Series "88" blowers can be mounted horizontally or vertically on pedestal type pipe plates or directly to flange type electric motors with a special drive end cover plate. Also available is a mounting kit for power take-off operation on frame rail of trucks and tractors. And this entire line of compact blowers can also be supplied with flange adapters and couplings for mounting on air-cooled gas engines, widely used on bulk cement and other trailers.

Self-contained Lubrication . . . A self-contained splash system oil lubricates the anti-friction bearings and precision helical steel gears, eliminates any need for external oil feed systems and coolers.

Low Sound Level . . . Light-weight, compact Sutorbilt package-type silencers that lower the sound level with little pressure drop can easily be fitted to all Series "88" blowers. Find out more about these radically new blowers that offer you a wide range of out-puts coupled with light-weight, small size and minimum power requirements. Write for literature today, Department G.

Representatives located in principal cities. Consult your classified telephone directory.

SUTORBILT IS WELL BUILT

CORPORATION, 2966 EAST VICTORIA ST. • COMPTON, CALIF.
SUBSIDIARY OF FULLER COMPANY • CATASAUQUA, PA.

FULLER COMPANY GENERAL INDUSTRIES TRADE MARK

2194
9 27

PENNSALT CONTINUOUS HYPOCHLORITE REACTION COLUMN

uniform bleach liquor produced in less space... at less cost than by conventional batch system

To meet the request of the pulp industry for a simple and reliable continuous sodium or calcium hypochlorite preparation system, Pennsalt engineers applied the well known basic principles of batch preparation:

1. The preparation of the alkali prior to chlorination at constantly uniform strength.
2. Reaction column design for rapid and complete mixing and reaction of the chlorine and alkali.
3. Immediate and continuous discard of grit and inert materials removed in the centrifugal clarification of calcium hypochlorite.

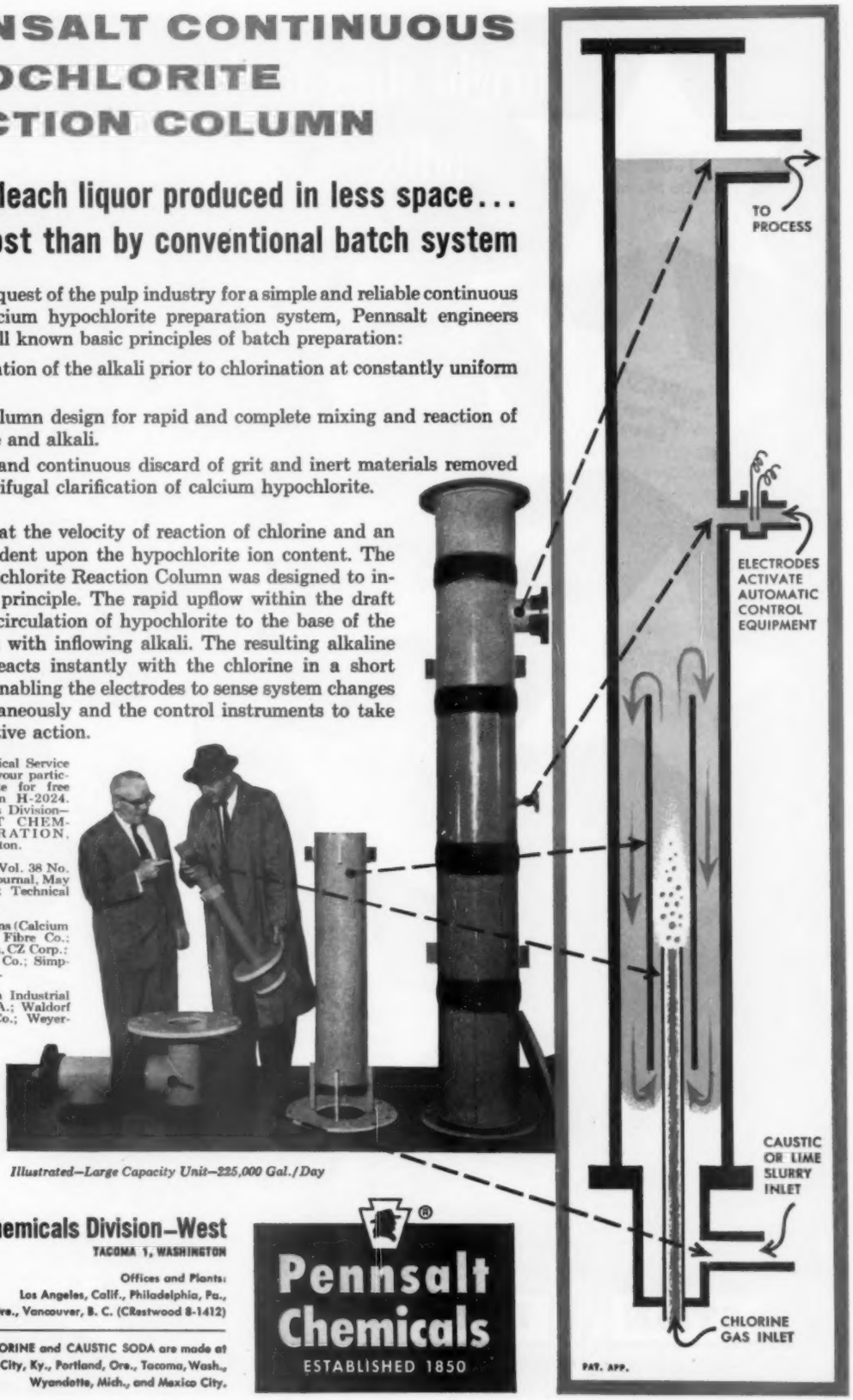
It is known that the velocity of reaction of chlorine and an alkali is dependent upon the hypochlorite ion content. The Pennsalt Hypochlorite Reaction Column was designed to incorporate this principle. The rapid upflow within the draft tube causes recirculation of hypochlorite to the base of the column to mix with inflowing alkali. The resulting alkaline hypochlorite reacts instantly with the chlorine in a short reaction zone enabling the electrodes to sense system changes almost instantaneously and the control instruments to take prompt corrective action.

Ask Pennsalt Technical Service for help in solving your particular problem. Write for free Technical Bulletin H-2024. Industrial Chemicals Division—West. PENNSALT CHEMICALS CORPORATION. Tacoma 1, Washington.

References: TAPPI Vol. 38 No. 10; Paper Trade Journal, May 7, 1956; Pennsalt Technical Brochure No. 21.

Reference Installations (Calcium Base): Longview Fibre Co.; St. Helens Division, CZ Corp.; Publishers' Paper Co.; Simpson-Lee Paper Co.

(Sodium Base): Cia Industrial San Cristobal S. A.; Waldorf Paper Products Co.; Weyerhaeuser Co.



Illustrated—Large Capacity Unit—225,000 Gal./Day

Industrial Chemicals Division—West
TACOMA 1, WASHINGTON

Offices and Plants:
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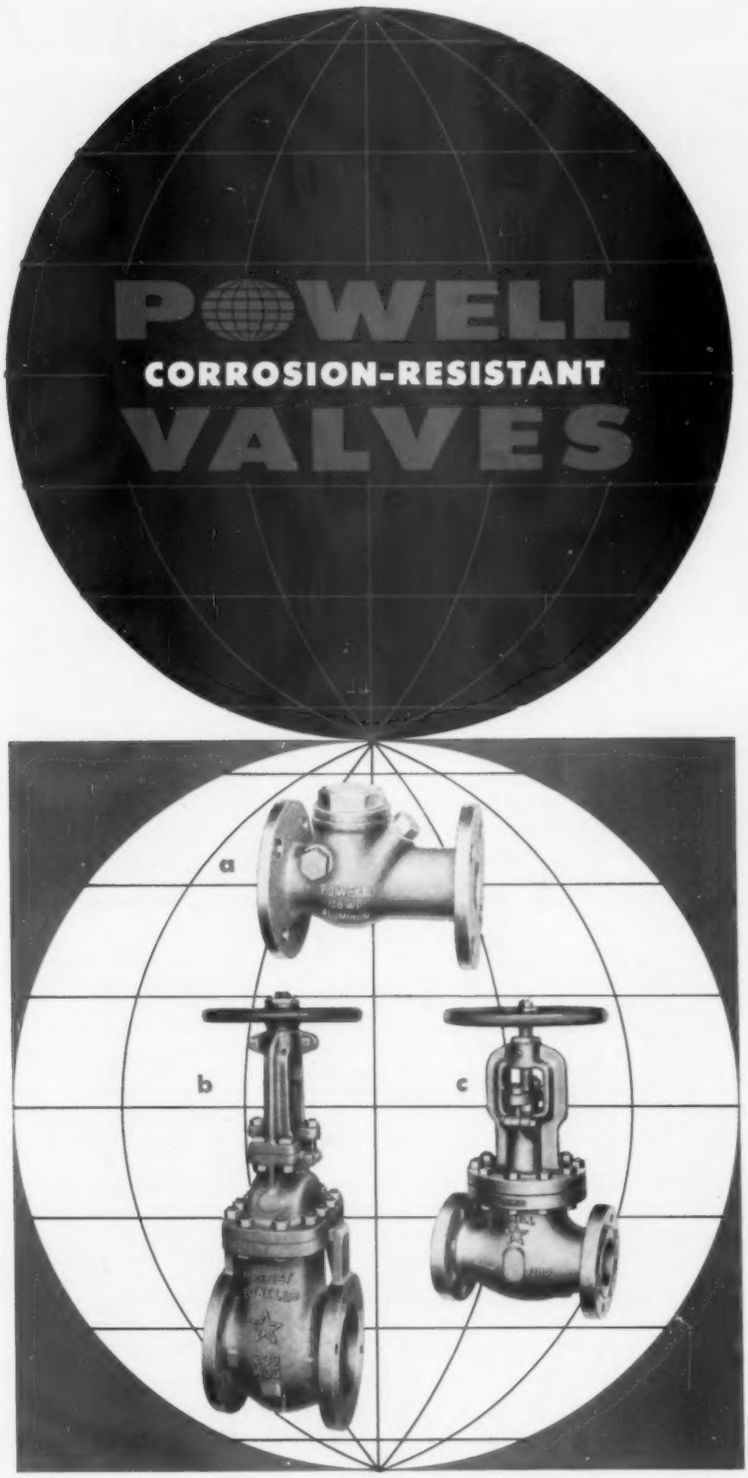

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Fig. 2193—Large Ni-resist O.S.& Y. Gate Valve for 200-pounds W.O.G. For services where high nickel-iron alloy valves are required.

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Fig. 3031SS—Stainless Steel O.S.& Y. Globe Valves for 300-pounds W.P. Face to face and end flange dimensions conform to ASA Standard B16.5.

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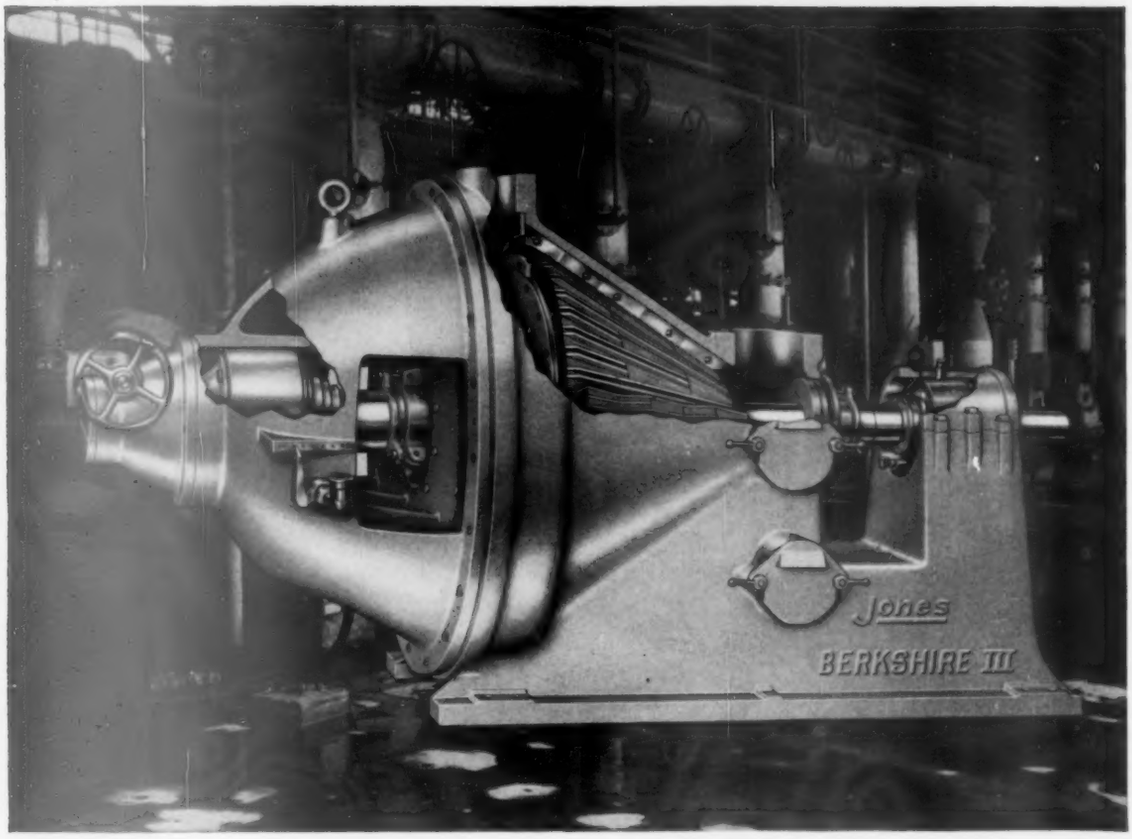

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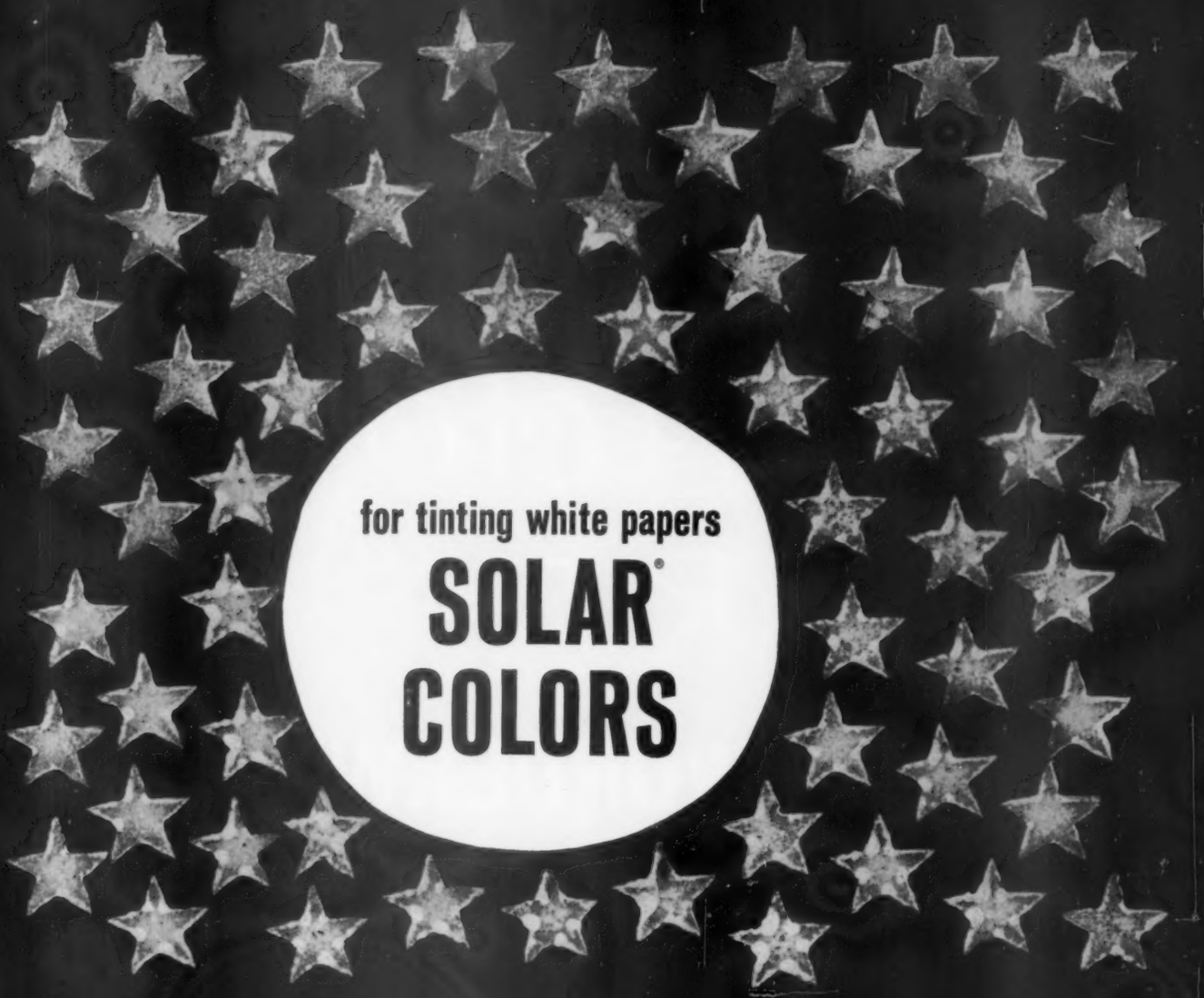

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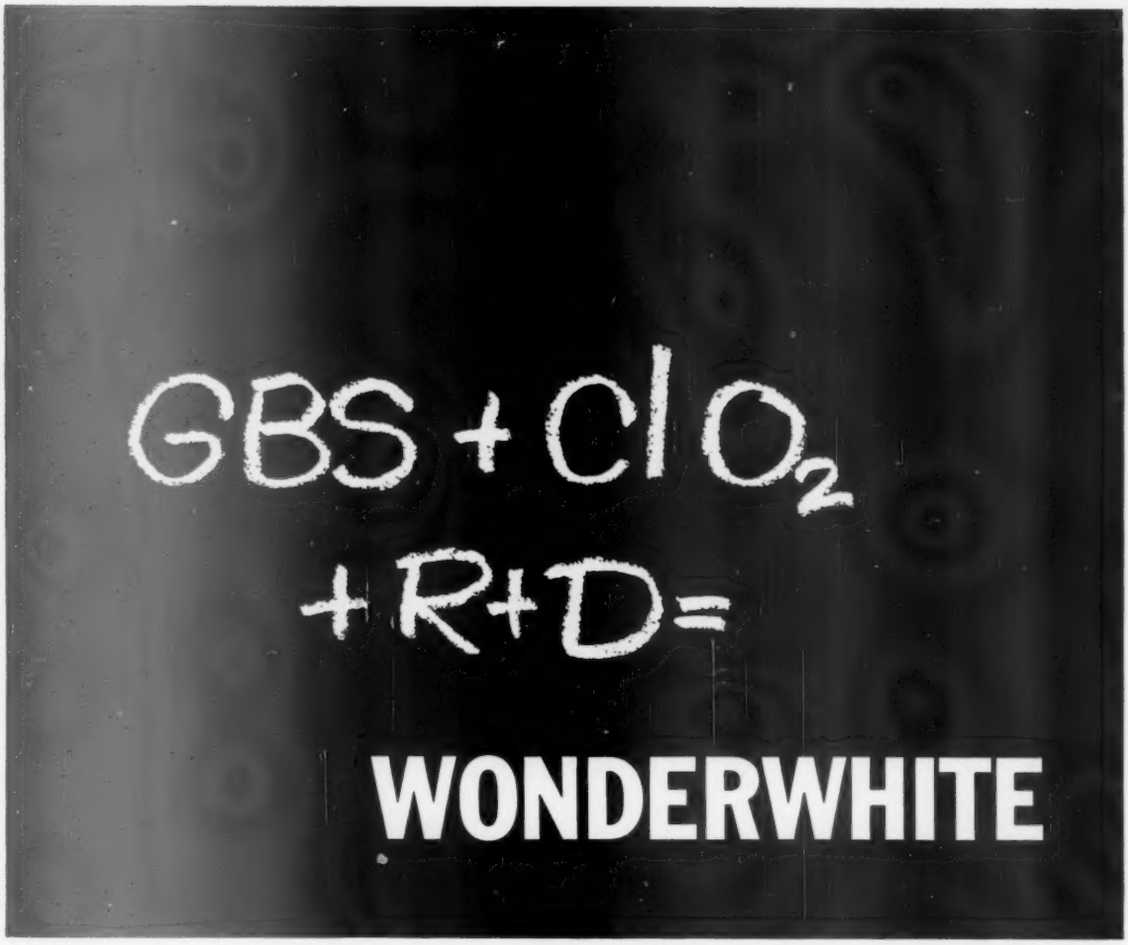

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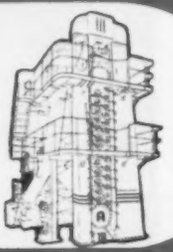
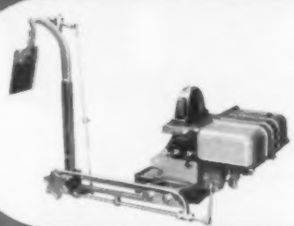
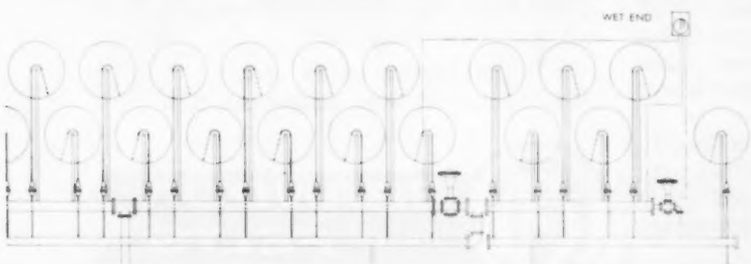


. . . a 147″ supercalender — *the largest glassine supercalender in the world!* This, incidentally, is the third consecutively wider stack purchased by Nicolet from Appleton in recent years . . . plus



. . . ten Appleton-made Gilbert & Nash Air Operated felt and wire guides . . . plus



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Start on California Mill

Gardner dryers after Beloit machine to make Simpson Lee grades for which Vicksburg is well known

● Plans are moving rapidly ahead for the new Simpson Lee Paper Co., $7,000,000 paper mill in California to manufacture the bond, ledger, text, cover and specialty papers—the line now made by Lee Paper Co. in Vicksburg, Mich., but for the Pacific Coast market.

Foundation work was begun on the new mill located at Ripon, California, about 85 miles due east of San Francisco. As the map shows, the mill will be in the vicinity of the Crown Zellerbach and Fibreboard mills at Antioch and Stockton in the upper bay region. Actually the Simpson Lee site is in the San Joaquin Valley.

The Ripon plant will occupy a 220-acre plantsite and will serve a market area consisting of 11 western states. Annual output is to be in the 15,000 to 18,000 ton range.

Thomas C. Leddy, Simpson-Lee's West Coast representative at Menlo Park, Calif., is cooperating on the Ripon project with the Vicksburg headquarters personnel. Mr. Bardeen and the firm's engineering group are dividing their time between the Michigan operation, the Simpson Lee division at Everett, and California.

A Beloit Iron Works 136 inch wire Fourdrinier machine has been ordered. A small number of high velocity Gardner dryers will be used in the conventional drying bank. One of the new developments of recent years, the Gardner dryers' high speed drying reduces required drying area and number of rolls appreciably.

MAX BARDEEN, busy directing the new mill work. . . .

A wide variety of woodpulps will be used and major suppliers will be the Pacific Northwest mills, only about 1,000 miles to the north.

The Ripon mill will be virtually a closed system and the engineering is being carried out to comply with a set of rules and requirements as laid down by the California Pollution Commission.

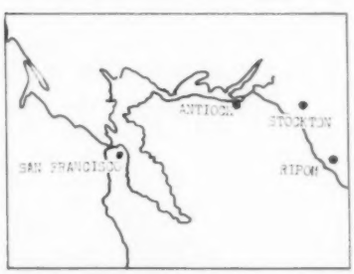
Maxwell D. Bardeen, president of Lee Paper Co., is the president of Simpson Lee Paper Co. Chairman of the board of the new company is William G. Reed, chairman of the board of Simpson Timber Co., one of the big forest products industries of the far west with plants and timberlands in Washington, Oregon and California, operated by parent and subsidiary companies.

The engineering for the new mill is being handled under direction of Mr. Bardeen. Three engineers of his Vicksburg staff are key men serving under him in carrying out the planning and engineering work. These are:

Edward Ross.
Raymond Senkowski.
Gordon Moore.

Mr. Moore was scheduled to move from Vicksburg to Ripon in June to serve as resident engineer in charge of the project work on the site.

For the startup and the key staff of the new California mill, engineers and technicians will be selected from Vicksburg, and also from the Everett, Wash., mill, which is likewise a division of the new Simpson Lee Paper Co. This was the former Simpson Paper Co. It operates a short sulfate pulp mill, de-ink pulp mill and makes book, offset, coated papers, writing, bond and note papers on two Fourdriniers.



THIS MAP SHOWS SITE OF MILL in relation to Crown Zellerbach and Fibreboard mills at Antioch and Stockton. It is due east of San Francisco.

If New Nitric Acid Pulp Tests Work It May Lower Bars for California Mills

● The use of nitric acid in pulping of wood, first explored by French scientists, is again undergoing experimental tests by University of California scientists. Its special interest in California, an important farming state, is because of the possible use of the effluent for farm fertilizer.

Dr. David Brink, Dr. J. Vlamis and M. M. Merriman are making the tests at the university's Forest Products Laboratory in Richmond, Calif.

While California has vast forests (second biggest lumber state in U. S. after Oregon), it is strict concerning water use and pollution by industries.

This process treats wood chips with nitric acid in a first stage, which partially solubilizes the wood. In the second stage, ammonium hydroxide is used and the wood is further defibrated or pulped.

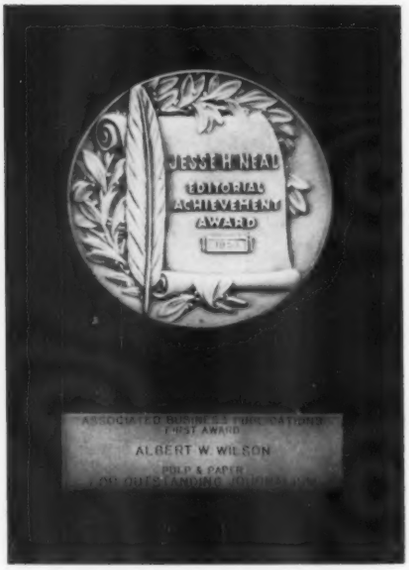
The two effluents, spent acid and ammonium hydroxide are recovered and combined to produce nitrogen fertilizers. Even the dilute from pulp washing may be used for irrigation, as it contains some nitrogen. Pot tests are promising, said Dr. Brink. The fertilizer use, he feels, may make the state of California more hospitable toward new chemical pulp mills, as it will be an important by-product for its farmers.

FIRST PRIZE

in national editorial contest won by PULP & PAPER for series of six articles on Russia and Europe

A. W. Wilson

• One of the first prize awards in a nationwide editorial achievement competition for business, industrial and professional publications has been won by the editor of PULP & PAPER, Albert W. Wilson, for a series of articles published last year on the pulp and paper industries of Soviet Russia and of a dozen European countries. The much-coveted Jesse H. Neal awards are given for articles which are deemed of greatest service and usefulness to readers as well as for editorial craftsmanship.



The Jesse H. Neal Award Plaque

"In recognition of outstanding editorial accomplishment" is the announced purpose of the annual contest, which is sponsored by the Associated Business Publications, with a membership representing more than 160 magazines. The awards are named in honor of the late Mr. Neal, who was first managing director of the ABP organization over 40 years ago.

The articles by Mr. Wilson were six in number—three of them described his visits to a paper mill and research center in Russia and his interview with the pulp and paper chiefs of Russia's State Planning Commission and other high officials of that industry. The other three articles described the phenomenal growth in paper production and consumption throughout Europe, gathered during a visit to 13 nations.

His articles were written from an objective point of view, to enlighten readers of both PULP & PAPER and PULP & PAPER INTERNATIONAL. These readers in 70 countries around the world are showing an increasing interest in international pulp and paper developments. Mr. Wilson is editor of both magazines, which are published by Miller Freeman Publications.

Observations on Russia

His observations on Russia were that the Soviet Union could not possibly catch up with leading paper using and paper manufacturing countries for several years. U.S.A. and Canada would continue to lead for some years. While Russia might this year or next go ahead of Britain, West Germany and Japan in total production of paper, its per capita use will continue to be lower for at least some years. But rapid growth in Russia is to be expected.

The articles described a process in Russia for making condensing papers without water, drawing fibers down upon a moving screen by vacuum, but later binding them in a sizing bath. This process is making a very strong paper, and several such machines were being built. He reported the Russians were building machines to use the Peter J. Massey coating process, also going in for tire cord woodpulp, Fourdrinier board, high yield and semi-chemical pulps and planning a big center for manufacture of all kinds of paper making machinery in the Ural Mountains area, where most of the new mills would be built. Russia is expanding paper production at 9 to 10% a year, but made only 3¼ million tons last year, about one-ninth of U.S. production.

Russian spokesmen insisted there would be no great increase in Russian pulp exports, and that it was needed for home consumption and that Russia would continue to export pulpwood for many years to come, and hoped to ship pulpwood to the U.S.A. from Siberia.

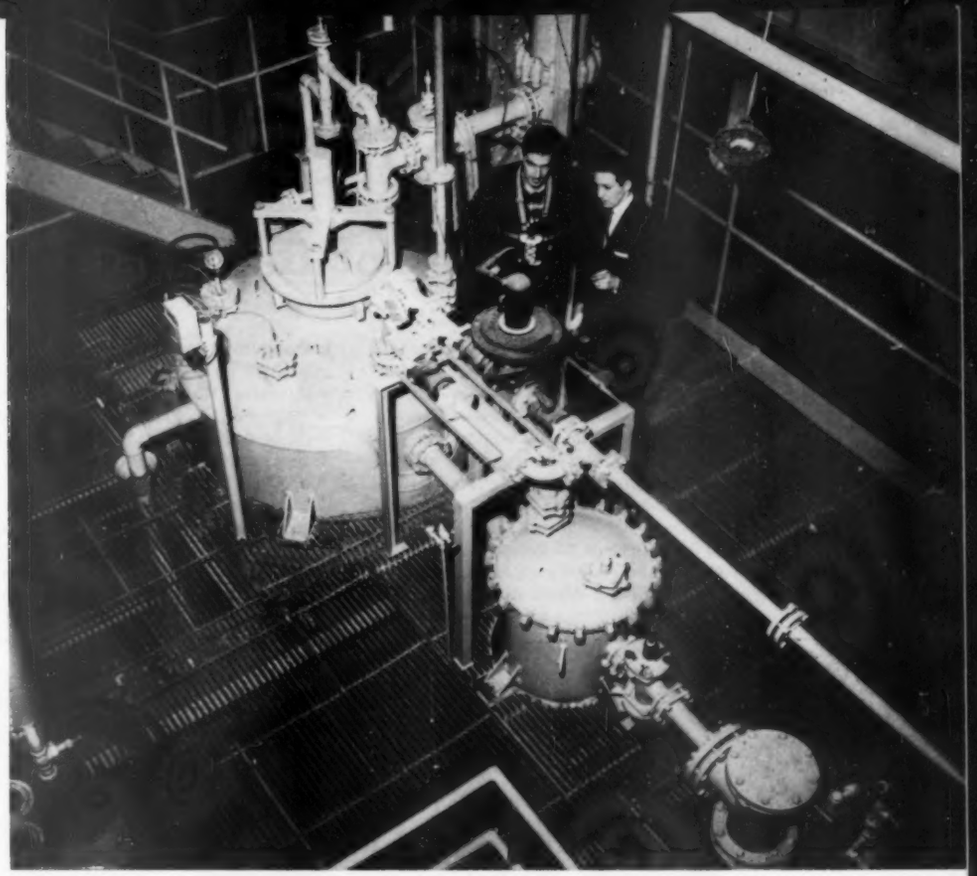
The interesting new uses of papers in the various European countries, especially for packaging, and introduction of new grades, were described. Interviews with important industry leaders in major countries were reported.

Along with the articles were numerous photographs taken during his travels, depicting the industry in various places and including pictures of leading personalities.

Awards Luncheon

First prizes in the Neal awards contest were awarded in three divisions, according to size of circulation of magazines. The various Neal awards were presented at a luncheon attended by 200 editors and executives in the Biltmore Hotel, New York, April 22. Judges in the contest were Prof. Floyd Arpen, Medill School of Journalism, Northwestern University, chairman; George Dusenbury, vice president and editorial director of Simmons-Boardman Publishing Corp. and former consultant to many publishers; Eldridge Peterson, vice president, John Orr Young & Associates, and former editor and publisher of Printer's Ink; and Cortland Gray Smith, editorial consultant to business magazines and former editor.

Mr. Wilson is a graduate of the University of Washington School of Journalism, class of 1925, and member of Sigma Delta Chi, journalism honorary, and was editor of the university daily paper. He joined Miller Freeman Publications in 1942 to be editor of PULP & PAPER. (He became editor of PULP & PAPER INTERNATIONAL, when it started publication in 1958.) Prior to that he was sports columnist and writer for the New York Evening World, and for a number of years served in Europe, the Near East and Africa for the Chicago Tribune and later the Associated Press, covering economic conferences, diplomatic and government offices and spent a year in Ethiopia during the Italo-Ethiopian War.



HEART of new chlorine dioxide generating plant is checked by (left to right) Henry Renault, control supt., Gaspesia Sulphite Co., Ltd. and Jean Chollet, head of pulping research group, Anglo Paper Products. Primary generator is large vessel, next is secondary generator and stripper. Scrubber is directly behind Mr. Renault.

Gaspesia's Puffless Wonder

New chlorine dioxide generating plant puts Gaspesia among super white pulp producers; so well engineered they've had only two "puffs"

By MAURICE R. CASTAGNE
Eastern Editor, PULP & PAPER

● When Gaspesia Sulphite Co. Ltd. started up its new chlorine dioxide generating plant in November, 1959, the timing was providential. Soon after, the industry changed the price structure of pulps, placing a premium on high brightness. What's more, the plant was so well engineered that it started up as if it had been running for years. Since then the company has had so few puffs (two) that operators call it the "Puffless Wonder."

As a result of using chlorine dioxide, Gaspesia has increased the brightness of its sulfite pulps from 88 to 92 GE, with little or no reversion. Improved strength and tear have been confirmed at the mill at Chandler, Que., and by customers.

The most striking feature of the new plant is the complete use of glassed-steel tanks and generators, extensive use of F-C (field cut) Glasteel pipe and glassed steel pumps. Mill operators and plant engineers credit the use of such equipment with contributing to the plant's fight against corrosion.

There are many other prominent features of this new chlorine dioxide plant and bleaching additions which make it more than just another ClO_2 addition. There are also several reasons for its successful operations. Gaspesia, as one of the Anglo group of companies, had the research, engineering and design experience and talents of the central pulping group and central engineering group plus the operating experiences of Dryden.

Gaspesia's 300 tpd sulfite market pulp mill at Chandler is some 500 miles northeast of Quebec City, on the picturesque Gaspé coastline on the Bay of Chaleur. Chandler has year-round ice-free shipping facilities for incoming fuel supplies, pulpwood (brought in on converted LST's) and for pulp shipments to world markets.

The general engineering department of Anglo-Canadian Pulp and Paper Mills, Ltd., under the supervision of Assistant Chief Engineer Robert J. Chambers, cooperated in engineering the chlorine dioxide generating plant with the project engineering group of The Pfaudler Co., a division of Pfaudler Permutit Inc. Extensive bleaching studies were made in Quebec City by Anglo Paper Products, Ltd. under the general supervision of Dr. Kenneth C. Logan. This is the central research organization for Anglo-Canadian Pulp and Paper Mills, Anglo-Newfoundland Development Co. Ltd., and their respective subsidiaries Dryden Paper Co. Ltd., and Gaspesia Sulphite Co.

A Word About "Puffs"

In pulp parlance, "puffs" are small, mild chemical reactions or explosions, creating a large volume of gas instantaneously. Puffs may result from improper mixture of reactants or instability of reactants. They may also result from contaminants in the reactor or generator.

Key Features of Gaspesia's ClO_2 Addition

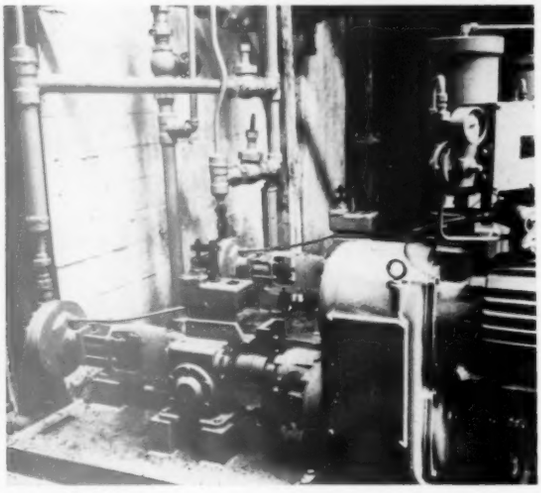
1. **Versatile bleaching sequence.** Gaspesia now uses chlorine, caustic, hypochlorite and chlorine dioxide with a second hypo stage added without washing. Bleaching sequence can be easily varied to produce a wide range of pulps by varying the quantity of hypo and ClO_2 and number of stages.

2. **Improved Generator Design.** In the Pfaudler-designed Glasteel generator, the combined diameters of the generator and the air SO_2 single inlet plate give a good distribution of air SO_2. This was observed when tried with water. Chandler took advantage of experience of Dryden and other mills and increased liquor depth in the generator by 25%.

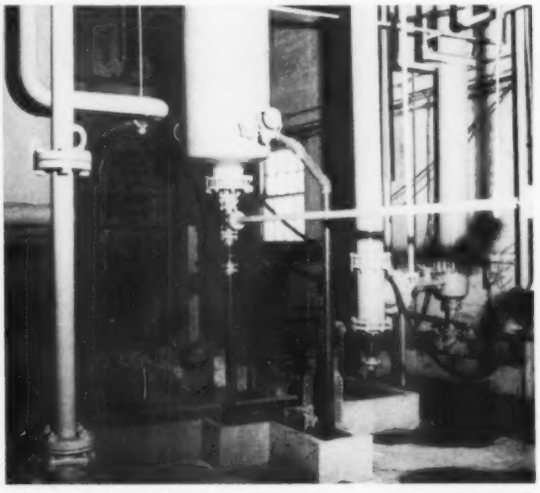
3. **Other improvements** stem from the difference in size of the generator and absorption tower. At Chandler, the column is higher in relation to its diameter. In addition, the Dryden scrubber is squat and protrudes from the top of the generator but Chandler's is a separate unit, off to one side. Connections for pumping sodium chlorate are provided.

4. **PVC Piping.** PVC was used extensively throughout the plant. Piping, fittings and valves were used where pressure and temperature permitted. Hot air welded socketed joints were used to speed up construction and provide tight rugged joints.

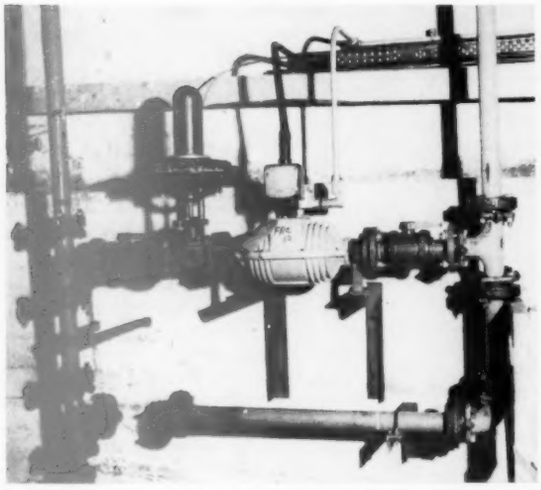
5. **The generating plant** is completely controlled from the main panel on the operating floor three flights up.



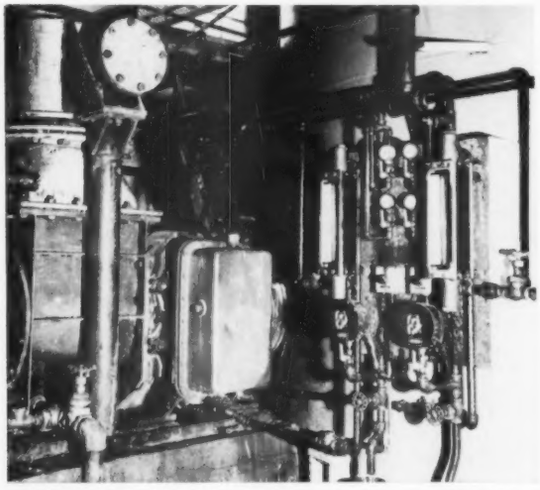
SIMPLEX PUMPS meter and pump sulfuric acid to generator.



PIPING NETWORK serves generating units. From left are primary generator, secondary, stripper and absorption tower. (Glassed-steel piping is light; PVC dark.)



METERING STATION proportions chlorine dioxide solution to upflow tower.



THICK STOCK PUMP is at bottom of upflow bleaching tower.

Help Boost Pulp Brightness and Quality

Instrumentation of the original bleach plant was so well designed eight years ago that new instrumentation for the ClO_2 generating plant could be added without the need for additional operating labor. The bleach plant still operates with two operators/shift.

6. Control room and laboratory as well as substation are pressurized.

7. Interesting pH sampler extracts liquor from bleach tower while tower is under pressure and without at same time extracting pulp stock.

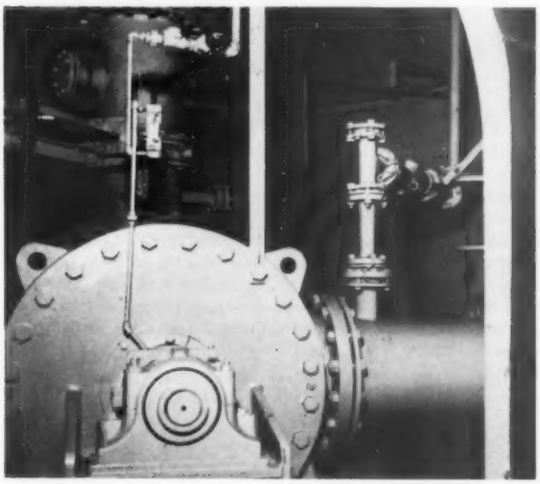
8. Gear pump on upflow chlorine dioxide tower brings "true bleaching continuity" to system and "is neat and easy to operate," says Chandler.

9. Home-made gas sampler detects tailgas loss. A pipe, 120-ft. long, runs from the absorption tower to the chlorine dioxide bleach panel. Operator sees sample through glass viewing tube mounted on panel. If it's green, he knows there's too much chlorine gas escaping and he can add more water.

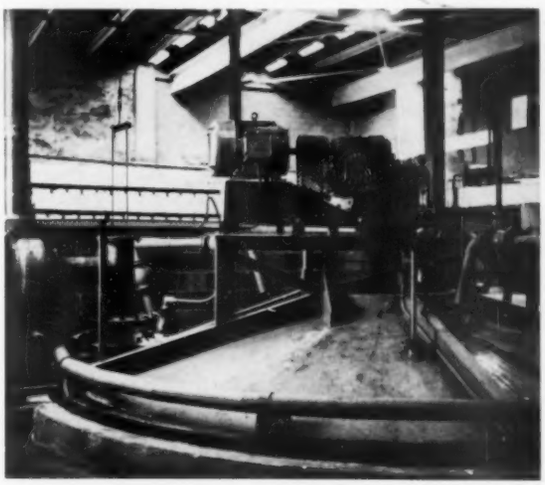
10. Outside chlorine dioxide storage tank is foam glass insulated and sits on a 12-in. high steel skirt.

11. Warm moist air from a Nash blower is supplied to the generator at 10 psi. The blower is noiseless. Since the air is saturated there is no need to inject steam, the usual method to prevent crystallization in the bottom of the generator. Seal water is circulated to maintain 110°F.

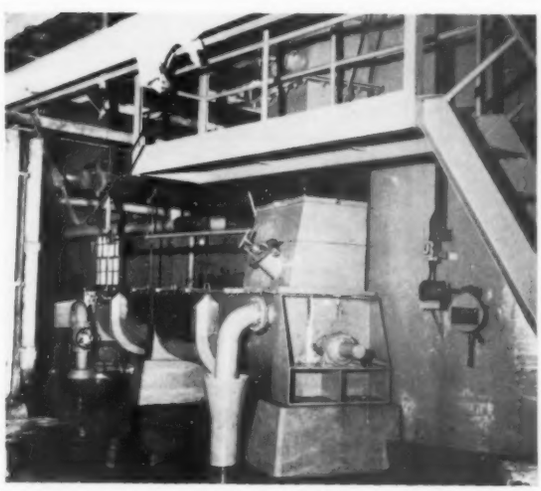
12. Channelling studies in the chlorine dioxide upflow tower gives a defi-



CHLORINE DIOXIDE solution is injected into stock line at bottom of upflow tower through this single shaft mixer.



DILUTION RING on top of upflow tower controls temperature of pulp. Caustic is injected by pipe at right.



WATER JACKETED CONVEYOR moves bleached stock from chlorine dioxide upflow tower to retention tower.

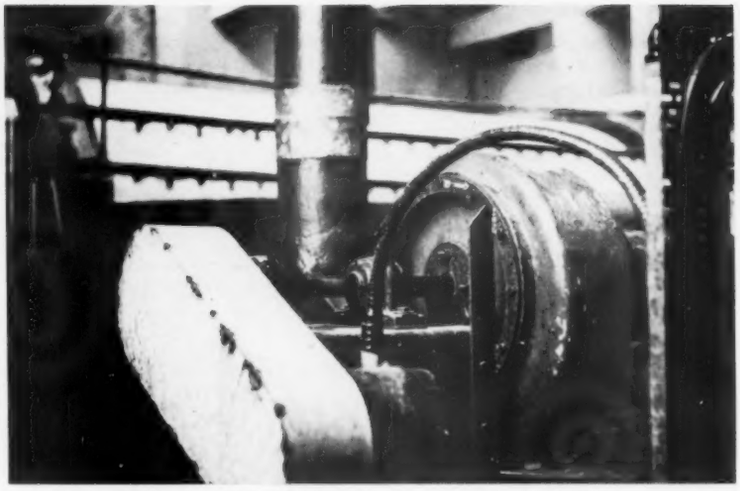
HOT AIR WELDED socketed joints on PVC piping speeded up construction and provided tight rugged joints.

Features of Gaspesia's ClO_2 Addition

nite quantitative result in three hours and show uniformity of bleaching. System devised by Gaspesia injects traces of chemicals which are measured by a special flame spectrophotometer.

13. Gaspesia uses SO_2 from regular acid system in ClO_2 manufacture. An Orsat measures SO_2 concentration. SO_2 analysis can be made in three minutes. Gaspesia doesn't use an SO_2 recorder or meter. Not necessary, they say, because they have a ratio controller which gives 1 lb. of SO_2/5 lbs./air. They control volume of SO_2 and air The Orsat is used to determine what percentage of mixture is SO_2. The proportion is adjusted by a ratio controller.

14. The quantity of hypo has been decreased about 1/3. Gaspesia adds 0.25% ClO_2 at 170°. This is the most efficient way to get better brightness and better bleaching conditions in the hypo stage at same time. Comment from management viewpoint: Kenneth McConomy, mill manager, says, "Before we installed the new system, if we had a pulp with a lower brightness we would try to eliminate dirt and increase brightness in the next hypo tower. This was not too successful.



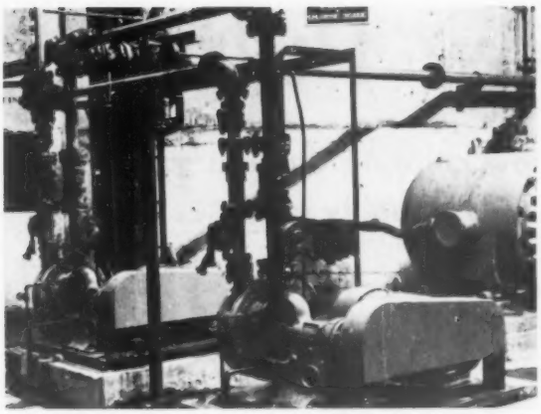
ClO_2 FUMES ARE EXHAUSTED from top of upflow tower by fiber glass fan through fiber glass ducts.

With chlorine dioxide we can very easily change concentration of chlorine dioxide added to the pulp and get the brightness we want by increasing the quantity of chlorine dioxide. This increase in quantity is very slight to get good improvement which means that overall we will get a good quality pulp with practically no off-quality."

Versatility engineered into the system is such, says Gaspesia, that all the possibilities have not been fully explored.

Suppliers of Principal Equipment for Gaspesia's ClO_2 Plant

Instruments: Foxboro Co. Ltd.
Upflow Tower: Toronto Iron Works
Upflow Tower Lining: Canadian Stebbins Eng. & Mfg. Co. Ltd.
Tower Rake: Sherbrooke Machineries Ltd.
300 Thick Stock Pump: Sherbrooke Machineries Ltd.
Single Shaft Mixer: Sherbrooke Machineries Ltd.
Water Cooled Conveyor: Sherbrooke Machineries Ltd.
pH Tester: Sherbrooke Machineries Ltd.
Ventilating Fans: Canadian Blower & Forge
Fabricated S.S. Pipe: Douglas Brothers
M.S. Pipe Hastelloy Lined: Douglas Brothers
Glass Lined Pipe: Pfaudler Co.
Fiberglass Pipe: Chemical Resistant Services
Saran Lined Pipe: Chemical Resistant Services
PVC Pipe: Grinnell Ltd.
M.S. Pipe: Crane Ltd.–Steel Supplies Ltd.
Nozzles: Rudel Machinery Co. Ltd. (Spray Co.)
Generator, Stripper, Scrubber, Absorption Tower, Secondary Generator, Chlorate Storage Tank, Chlorine Dioxide Storage Tank, Chlorate Head Tank: The Pfaudler Co.
Blower & Water Separator: Nash Engineering Co. of Canada.
Pumps: Babcock-Wilcox, Goldie–McCulloch (Centrifugal on Chlorate & Fresh Water), Goulds-Pfaudler (Centrifugal Glass Lined on ClO_2), Consolidated Engines & Machinery Co. Ltd., Milton Roy (Controlled Volume Simplex Pumps on H_2SO_4)
Valves: Crane (Stainless Steel Standard Valves), Coaton Ltd. (PVC Ball-Globe & Check Valves), McAvity & Sons Ltd. (S.S. Stock Valve), Associated Instruments & Controls Ltd. (Hastelloy Pulp Stock Valves), Pfaudler (Glass Lined Tank, Globe & Line Valves), Chemical Resistant Services (Saunders-type Diaphragm Valves)
Sight Glasses: Chemical Resistant Services Co.
Rotameters: Keith Mercer Co. Ltd. (Brookes)
Ejector: F.S.B. Heward & Co. Ltd. (Elliott)
Heat Exchanger: Bowden Industries Ltd.
Stainless Steel Hose & Fittings: Lytle Engineering
Armstrong Traps: Preston Phips Inc.
Insulation: Asbestos Covering Co. Ltd.
Foam Glass Insulation: Bouchard & Robitaille
Poro-Klean Filters: Peacock Bros. Ltd.
Basket Strainer: Grinnell Ltd.
Tygon: United States Stoneware Co.
Adams Poro Carbon Filters: Williams & Wilson Ltd.
Technical Cable: Northern Electric
Motors: Canadian Westinghouse Co. Ltd., Bepco Canada Ltd., Thompson Electrical Ltd.
Starter: Canadian Westinghouse Co. Ltd.



GLASSED-LINED PUMPS move chlorine dioxide solution from storage to metering station.

SODIUM CHLORATE storage and day tanks are of Pfaudler glassed-steel, as is all ClO_2 generating equipment.

Glassed-Steel Solves Corrosion Problems

The complete use of glassed steel vessels, F-C (Field Cut) Glasteel pipe and glassed steel pumps are the distinct features of Gaspesia's chlorine dioxide plant. All generating equipment is glassed-steel, probably the first such complete use in a chlorine dioxide generating plant in the industry. Glasteel equipment and piping were designed and supplied by The Pfaudler Co., a division of Pfaudler Permutit Inc.

Because of their corrosion resistance, glassed steel storage tanks have been used previously in chlorine dioxide generating plants in the U.S. They are said to be more economical than stainless in sizes over 10,000 gals.

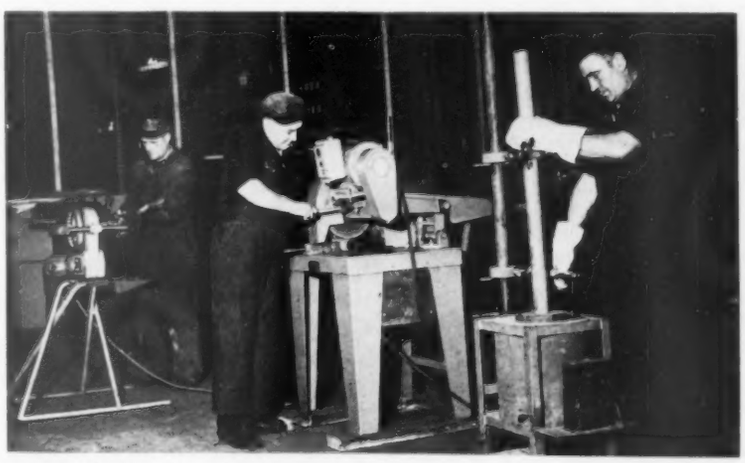
Pfaudler makes this equipment by high temperature (1600°F) firings in which glass is actually interlocked to steel with a permanent physical bond. Gaspesia's satisfaction to date with this equipment stems primarily from its excellent resistance to the highly corrosive chemicals used in chlorine dioxide generating. Some reluctance might be expected to a product that has glass as one of its components, but the Gaspesia operators and engineers are satisfied that glassed steel is not excessively fragile.

At Chandler, the scrubber, stripper and absorption towers which are packed with interlock saddles are of Glasteel construction as are also the primary and secondary generators, the chlorine dioxide solution storage tank and sodium chlorate storage, day and head tanks.

While the chlorine dioxide generating plant was under construction, Pfaudler perfected its F-C (for field cut) Glasteel piping. The original contract with Pfaudler called for conventional glasslined pipe, but Gaspesia decided to use the Field-Cut piping primarily because it could be field cut and flanged by mill forces. Chandler operators say this equipment gives greater flexibility to their piping layout, facilitates maintenance and permits changes as they come up. Service life is reported to be double that of conventional glasslined piping for corrosion and abrasion resistance. Cost of the equipment needed for installation is moderate, says Gaspesia and can be recovered after the first installation.

There are four installation steps. The Glasteel pipe is cut to length and threaded. The end is then fire-polished for a smooth surface, flange is threaded and pipe is belt sanded for a seal-tight connection. Field-Cut equipment consists of special threading dies and a small portable fire-polishing furnace in addition to standard pipe shop equipment. The gaskets used have corrosion resistant Teflon envelopes at product contact area.

Another interesting feature of the use of glassed equipment is that the two pumps which deliver chlorine dioxide solution from storage to the upflow bleaching tower are Goulds-Pfaudler Glasteel pumps. Every part of these pumps which comes in contact with the chlorine dioxide solution is glassed. Gaspesia says the pumps are good, subject to proper handling and are priced about the same as better grade corrosion alloys.



SIMPLE SET UP NEEDED for F-C (field cut) glass pipe is shown by Gaspesia's maintenance crew.

Proving a New Pulp

Behind-scenes story of Gaspesia's new chlorine dioxide sulfite pulp, Wonderwhite: engineering, designing and quality analyses

By JEAN L. CHOLLET, Anglo Paper Products
PIERRE B. LEDUC, Anglo-Canadian Pulp & Paper Mills Ltd.
HENRY RENAULT, Gaspesia Sulphite Co. Ltd.

● Use of chlorine dioxide for bleaching chemical pulps has grown rapidly in the last decade because of superior brightness obtainable without fiber degradation. Originally chlorine dioxide was used to bleach kraft and dissolving sulfite pulps. But increasing demand for brighter, cleaner and stronger pulp has now extended use of chlorine dioxide to bleaching of paper grade sulfite.

After successful start-up of its new chlorine dioxide generating and additional bleaching facilities, Gaspesia Sulphite Co. Ltd.'s mill in Chandler, Que., is now producing its new "Wonderwhite," a high-brightness sulfite pulp suitable for a variety of paper and glassine grades. Compared with hypochlorite-bleached, the new pulp has better strength properties and color characteristics. Folding endurance, brightness and viscosity are particularly improved.

Engineering

Bleach plant engineering was done by Anglo-Canadian Pulp and Paper Mills Ltd.'s general engineering dept., while equipment erection (with exception of the upflow tower shell and lining) was done by Gaspesia Sulphite mill forces. The bleaching tower was built by Toronto Iron Works Ltd.

Equipment for stock handling was supplied by Sherbrooke Machineries Ltd. (Impco). This consisted of a 300-type thick stock pump, a titanium-lined single-shaft mixer, a scraper assembly for the top of the upflow tower and a water jacketed screw conveyor.

For this installation the double-shaft mixer, which was discharging into the No. 1 hypo tower, was relocated to a position where it now discharged vertically downwards into the thick stock pump through an 18-in. dia. stainless steel pipe 67 ft. long. From the pump stock is carried to the single-shaft mixer and to the bottom of the upflow tower. The clo_2 solution is added just before the mixer.

The Impco type tower is 90 ft. 4 in. high, 13¾ ft. in dia., with a 16-ft. dia. launder equipped with a Sherbrooke scraper assembly and rests on a skirt-type support. The lining was provided and installed by Stebbins Engineering & Mfg. Co. and has a 2½-in. thick acid-proof brick laid up with full polyester resin cement joints and backed up by 1 in. of Portland cement-sand. Because of the bleaching sequence selected, dilution nozzles were added on the top of the tower. To prevent the possibility of chlorine dioxide gas escaping into the bleach plant atmosphere, the system from the top of the upflow tower through to the top of the last hypo tower is completely enclosed. Ventilation is provided by a size 23 Canadian Blower & Force fiberglas fan piped up with fiberglas ducts.

Chlorine Dioxide Generation

All major equipment for production of chlorine dioxide gas by the Mathieson process was supplied by Pfaudler Co. and is located in the bleach plant. The generating plant occupies an area of about 24 ft. x 35 ft. x 67 ft. high, which allows for installation of additional equipment to triple present capacity of 1 ton/day.

Chemicals for the generating process are unloaded in the bleach plant train shed to nearby storage facilities. Sodium chlorate is pumped to a head tank in the generator room, from which point it flows by gravity through a magnetic flowmeter recording controller to the scrubber. Sulfuric acid flows by gravity to two Milton Roy Simplex pumps, which meter and pump the acid directly to the generator. This eliminates need for a head tank. These pumps are of the diaphragm type with variable-stroke and variable-speed drive. Sulfur dioxide is obtained either from the sulfite mill's high-pressure acid accumulator or from tank cars.

Warm moist air is provided by an L-3 Nash blower with a water separator and a temperature control valve. In this system seal water is re-circulated, and an air temperature of 110° F is maintained. This air is then proportioned with sulfur dioxide and delivered to the primary and secondary generators.

Chlorine dioxide flows from the outside storage tank to two Goulds-Pfaudler Glasteel pumps inside the bleach plant. It is then pumped through a magnetic flowmeter indicator controller to the stock line, into which it enters through a titanium dip stick.

To eliminate any scale or dirt from entering the generator, Cuno "poro-klean" filters with a porous type 316 stainless steel cartridge have been located in parallel in both the sulfur dioxide and sulfuric acid lines just before transition to the Glasteel pipe. Two Adams "poro carbon" filters are used on the chlorate solution line to the scrubber.

Valves used in lines carrying corrosive material are Pfaudler glassed line-type valves, PVC ball and Y valves as well as Saunders type glass or saran-lined diaphragm valves. Pfaudler glass-lined pipe is used on all generator inter-connections, on generator feed lines between filters and generator and chlorine dioxide lines to storage tank and bleach tower. PVC piping is used quite extensively. In one particular instance, 3-in. dia. PVC piping is used on the 500-ft. main sewer, which drains all vessels in the generator room. PVC ½-in. dia. piping is used also for sample lines that are brought to a central collecting station. Mild steel and stainless steel pipe are used where applicable.

Developing the Bleaching Process

The bleaching sequence previously used at Gaspesia included a chlorination, an extraction and two successive calcium hypochlorite stages. However, the bleach plant, constructed in 1952, had been designed to accommodate an additional bleaching tower, and ample room had been left for relocating a possible chlorine dioxide generating unit.

Before a decision was made to incorporate chlorine dioxide in the bleaching sequence at Gaspesia, extensive bleaching studies were made to determine the best possible sequence and operating conditions that would result in maximum improvement in pulp quality.

The results indicated that a combination of hypochlorite and chlorine dioxide as opposed to the use of hypochlorite alone would give a substan-

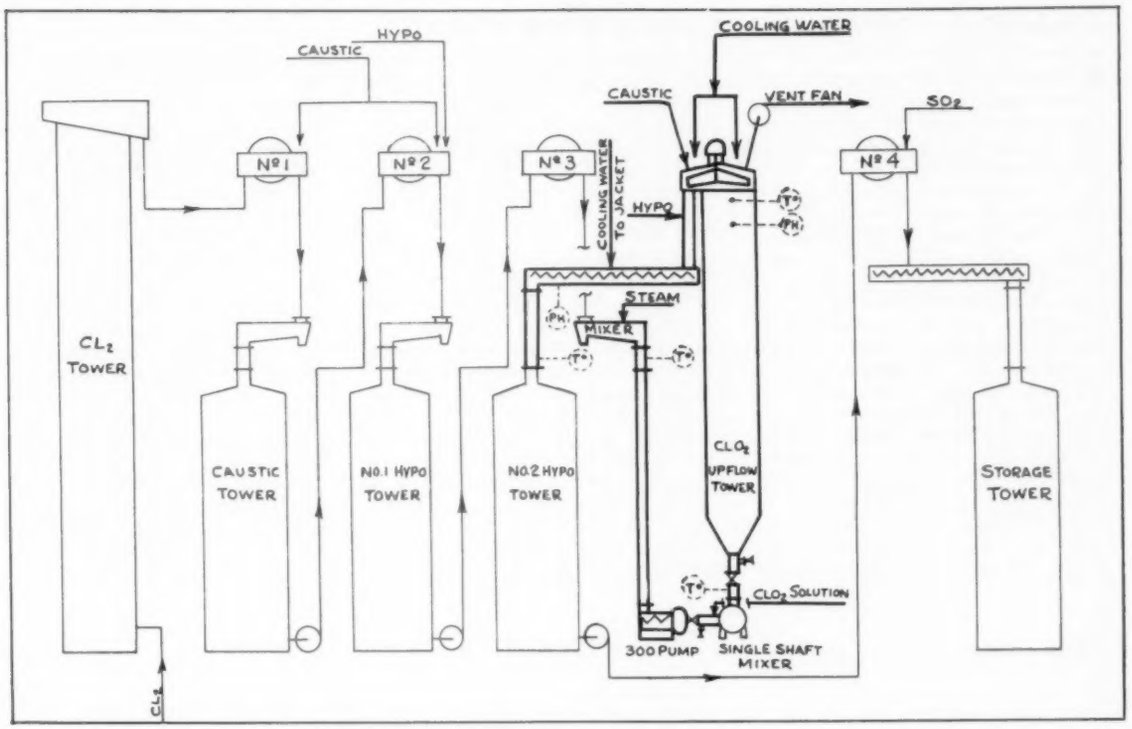


FIG. 1. FIVE STAGES, FOUR WASHERS SAVES MONEY. Gaspesia uses existing washers, adds hypo after chlorine dioxide stage without any intermediate washing. Results: considerable savings in equipment cost and better use of chlorine dioxide added.

tial improvement in quality; some of the data obtained has already been published.[1] It was also indicated that optimum dirt removal would be obtained with a four-stage bleaching sequence involving chlorine dioxide and/or hypochlorite when a hypo stage was followed by a chlorine dioxide stage.

Further laboratory work showed that use of hypochlorite in combination with chlorine dioxide as opposed to bleaching with hypo alone improved the opacity characteristics of pulps bleached to the same lightness. This is shown in Table II. Since it was also believed that an upflow tower was most suitable for chlorine dioxide bleaching, an additional tower was built that made it possible to select a five-stage bleaching sequence if required. This extra tower also provided versatility in the selection of suitable bleaching sequences for producing various grades of paper and glassine pulps.

One of the bleaching sequences selected comprises a chlorination, an extraction, a hypochlorite stage, and a chlorine dioxide stage followed by neutralization, dilution and hypochlorite addition without intervening wash. This sequence was originally

Table I—Strength Properties—Comparison of Hypochlorite and Chlorine Dioxide Bleached Sulfite Pulps

		Chlorine dioxide Bleached pulp	*Hypo Bleached Pulp*
Burst Factor	at 500 C.S.F.	43.0	41.0
	at 300 C.S.F.	57.5	55.0
MIT Fold	at 500 C.S.F.	410	345
	at 300 C.S.F.	740	485
Breaking length			
	at 500 C.S.F.	7500	7500
	at 300 C.S.F.	9500	9300
Tear Factor	at 500 C.S.F.	0.95	08.0
	at 300 C.S.F.	0.74	0.63

Beating carried out in a Valley beater according to TAPPI standards.

Table II—Chemical and Physical Properties of Hypochlorite and Chlorine Dioxide Bleached Sulfite Pulps

	Chlorine dioxide Bleached pulp	*Hypo Bleached Pulp*
G.E. Brightness—%	91.5	88.7
Brightness reversion° —G.E. pts.	2.2	3.8
Opacity—%	90.1	89.0
0.5M C.E.D. Viscosity—cp.	23.6	13.2
Alpha-cellulose—%	86.5	85.6
Ash—%	0.19	0.32

°After one hour in an oven at 105°C.

developed by Dr. H. W. Rapson and is used under license from Canadian International Paper Co.[2] The advantage of this system is possibility of using the existing four washers resulting in a considerable saving in equipment cost. It also allows for better use of the chlorine dioxide added.

The system operates as follows: From No. 3 washer after the first hypo stage, the pulp at about 14 to 15% consistency goes to a double-shaft mixer, where sufficient steam is added to maintain the temperature at about 170°C in the upflow tower. Pulp is then fed to the high-density pump, after which chlorine dioxide solution is added at a rate corresponding to 0.25% ClO_2 on the basis of dry pulp. Before entering the Impco upflow tower, the pulp and the chlorine dioxide are thoroughly mixed in the single-shaft mixer. Investigations carried out under normal operating conditions have shown that mixing is very effective and also that channelling sometimes encountered in upflow towers is practically non-existent in the new tower.

Pulp Quality

After pulp has reached the top of the tower, it is neutralized with caustic and cooled to about 110°F by diluting with water. Stock is then scraped off and falls into a water jacketted conveyor that carries it to the last tower. A small quantity of hypochlorite is added ahead of this conveyor. After retention of about 2 hrs. in the last stage, the pulp is washed, acidified and conveyed to a high-density storage tower ahead of the Centri-Cleaners.

After a short operating period, tests results have indicated that the pulp bleached with chlorine dioxide was superior in every respect to that previously produced by hypochlorite alone. A significant increase in strength has been noted, especially with respect to folding endurance. This is shown by table I and figure 3. Improved strength characteristics are the direct results of replacing some of the hypochlorite used for bleaching by chlorine dioxide, thus reducing the oxidative degradation of the cellulose fibers.

In addition to higher pulp strength, chlorine dioxide also resulted in improved physical and chemical properties of the pulp. The increase in viscosity that within certain limits can be correlated to pulp strength is particularly pronounced. Pulp brightness is also markedly improved. Table II compares some properties of chlorine dioxide and hypochlorite bleached pulps. The reflectance curves obtained with a spectrophotometer are also compared in Fig. 4.

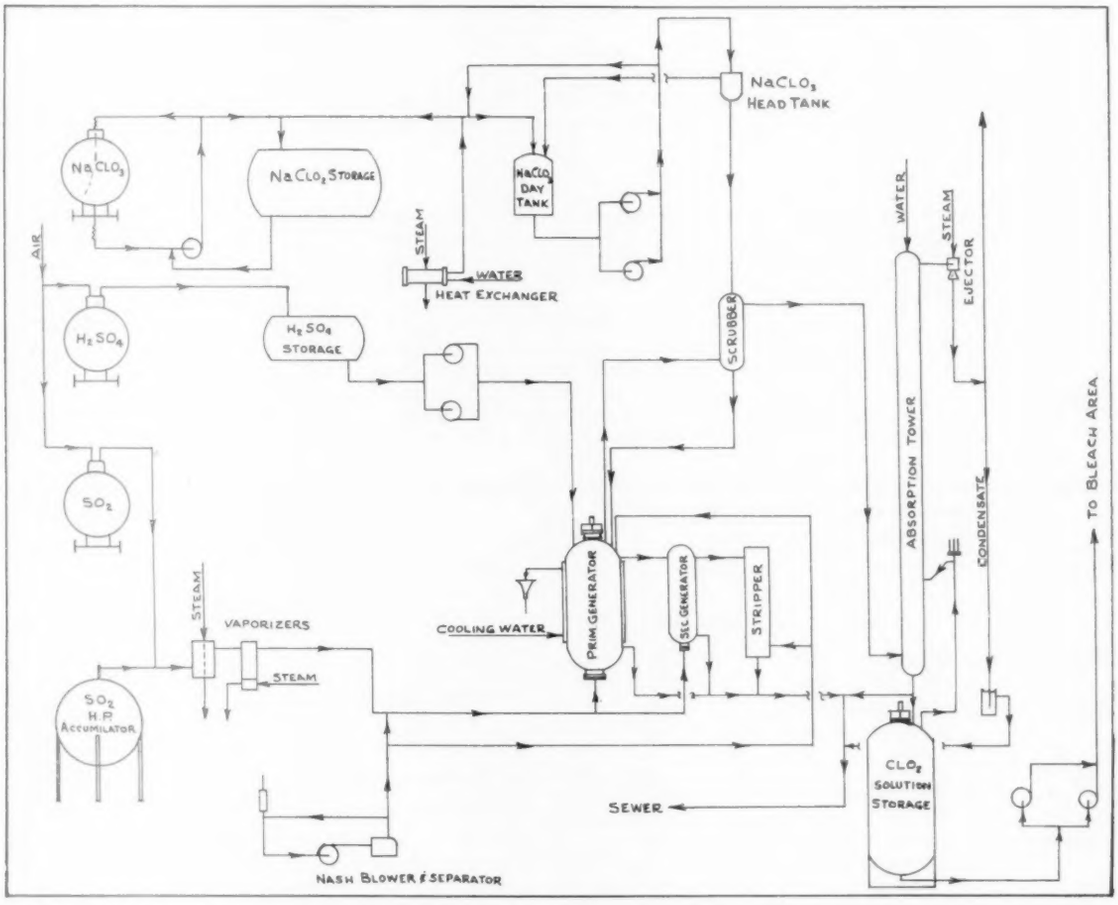


FIG. 2. CHLORINE DIOXIDE GENERATING SYSTEM uses two generators and a scrubber that is set apart from primary generator. All storage vessels and generators are glassed-steel.

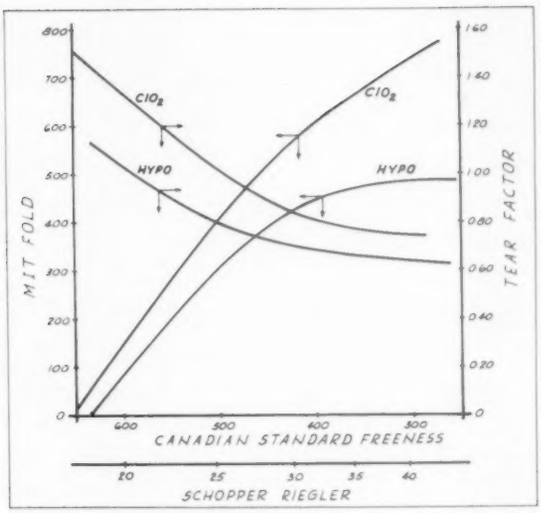


FIG. 3. BEATER CURVES of chlorine dioxide and hypochlorite bleached sulfite.

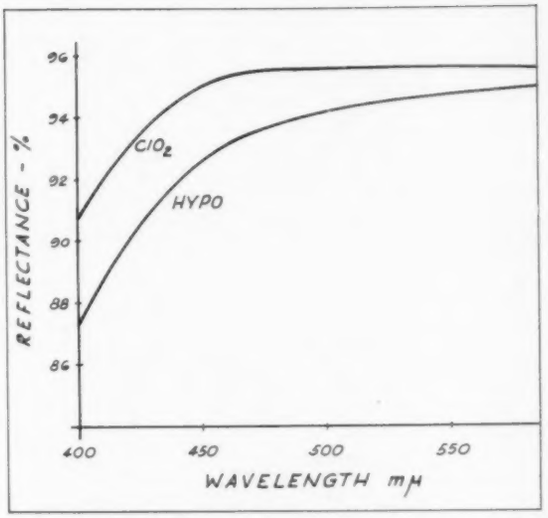


FIG. 4. REFLECTANCE CURVE of bleached sulfiite pulps (using DU spectrophotometer).

An additional advantage of chlorine dioxide over hypochlorite bleaching results from possibility of achieving better control of the pulp quality, resulting in the production of a more uniform product.

Instruments and Controls

All phases of the operation are directed from the bleach plant control room, which is elevated above the operating floor and is located three floors above the generator room. From this room, while standing before a push button console, the operator can see the four washers in the system as well as the top of the new upflow tower. About 13 ft. to the rear and parallel to the console stand three panels, one containing various flow, temperature, and level recorders for the four-stage bleaching system; the second containing instrumentation for the chlorine dioxide generator; the third, an annunciator panel that, by means of a buzzer and an illuminated square naming the faulty piece of equipment, alerts the operator to anything unusual in the operation.

Temperature of all stock entering the chlorine dioxide bleaching cycle is controlled by means of a resistance bulb located at the outlet of the double-shaft mixer. This temperature is transmitted to a consotrol which operates the control valve in the steam line to the double-shaft mixer.

Resistance bulbs are also located at the bottom of the upflow tower, just below the launder and at the outlet of the water-cooled screw conveyor. These temperatures are transmitted to a multi-pen Dynalog recorder in the control room.

The liquid temperature in the Mathieson generator is measured by a capillary. The signal is transmitted to a Dynalog temperature recording controller that keeps the temperature at about 110°F by controlling the valve on the cooling water supply to the generator jacket. Temperature in the primary generator is measured by a resistance bulb whose signals are transmitted to the above noted Dynalog. The indicating arm is equipped with a rotax switch that closes the sulfur dioxide valve and opens the air purge valve by operating solenoid valves in the control air systems of these valves when a temperature rise over a certain pre-set point occurs.

Pressure in the primary generator is controlled by a D/P cell connected to the generator in such a manner that none of the corrosive gases or liquid comes in contact with the diaphragm. The D/P cell is piped to a consotrol that controls the valve on the steam line to the ejector that evacuates the generator through the absorption tower. With a pressure rise such as results from an explosion, steam supply to the ejector is increased, thus bringing the pressure in the system back to normal.

Water flow to the upflow tower shower and generator absorption tower is also being measured with D/P cells and orifice plates. D/P cells are also being used to transfer liquid levels in various storage tanks to recorders in the control room.

Air and sulfur dioxide flows are measured with D/P cells used in conjunction with integral orifices. Signals from the D/P cell on the sulfur dioxide line are transmitted to a pneumatic flow ratio receiver recording controller, while those from the D/P cell on the air line are transmitted to a consotrol-pneumatic flow receiver indicating controller, as well as to the flow ratio controller. The required air flow is then set on the consotrol, and the ratio controller feeds the correct amount of sulfur dioxide for the air. This arrangement gives added safety, as in the event of air failure the sulfur dioxide flow drops to zero as the air flow decreases.

Proportioning of the air-sulfur dioxide mixture to the main and secondary generators is accomplished manually, and quantities are indicated on Brooks indicating flowmeters. Air to the stripper columns is controlled manually in the same manner.

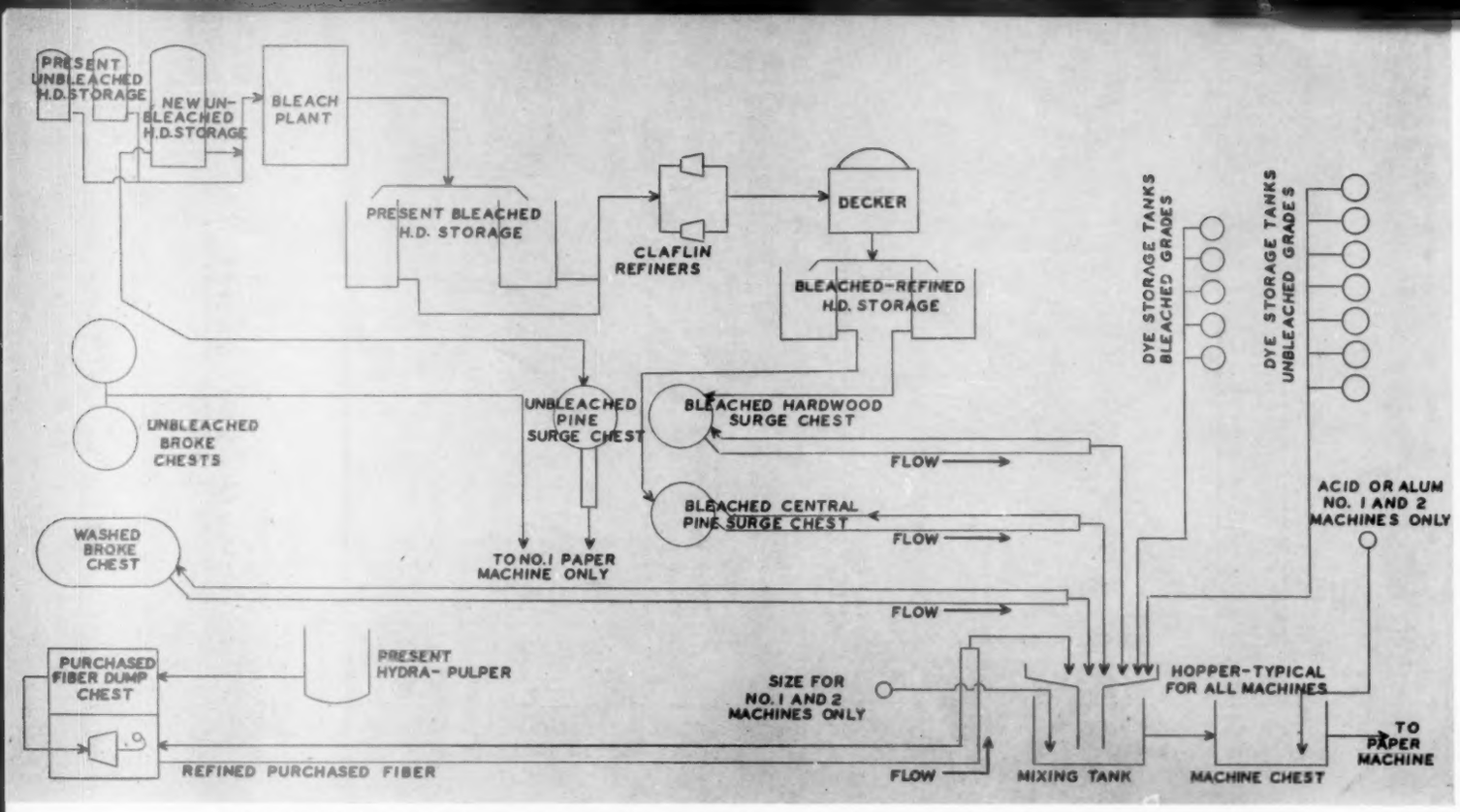
Magnetic flowmeters are used in conjunction with receiving flow recorders and consotrols to record and control chlorate and chlorine dioxide flows. On the sulfuric acid supply, flow is measured by a magnetic flowmeter and receiving recorder, while control is achieved by remote operation of the variable-speed drives of the Milton Roy pumps by air pressure.

Instruments and panels were supplied by Foxboro Co., and installation was carried out by the mill instrumentation department.

References:

1. Chollet, J., Juffy, M., Sopall, O. Studies of Dirt in Sulphite Pulp, Pulp & Paper Mag. Can. 60, No. 4: T-123-128 (April 1959)

2. Rapson, W. H. Canadian Patent 470,478, Jan. 2, 1951, assigned to Canadian International Paper Co.



NEW REFINING AND STOCK METERING SYSTEM (shown in this flow chart) simplify an important operation at S. D. Warren mill, Muskegon, Mich.

Warren Scores a First...

at Muskegon, where plant converted from batch to continuous blending in single move. New refining, stock metering called "success".

By DON W. ZEIGLER
Midwest Editor, PULP & PAPER

—Muskegon, Mich.

● No less than eight major benefits have resulted from installation of a spanking new refining and stock metering system at the Central mill of S. D. Warren Co., Muskegon, Mich. The plant can boast of being one of the first in the industry to use magnetic flow meters for completely automatic proportioning of stocks, additives and dyes.

The new system employs continuous refiners and is arranged so that hardwood, pine and purchased pulp all receive "separate treatment" bringing them to proper level of development before blending and final treatment.

Spokesmen for the mill's technical service have this to say of the installation: "Some of the benefits will be (1) improved pulp quality; (2) more flexible pulp mill-to-paper machine scheduling; (3) optimum fiber treatment, resulting in maximum strength; 4) lower furnish cost because of increased hardwood use; (5) accurate measurement; (6) more uniform product; (7) less waste, and (8) less dirt and slime because of stainless steel piping and tile-lined tanks".

No Production Time Lost

Muskegon produces kraft pulp from both hardwoods and softwoods. Pulps are bleached separately but in the same equipment in a bleach plant installed 3 years ago. High-density storage is provided both before and after bleaching.

According to one supplier: "This was the first mill to convert totally from batch to continuous blending in a single move." And no production time was lost in the switch.

While one machine was running on batch, automatic proportioning was being set up and checked out. Then during normal wash-up, the machine was switched to continuous; whereupon new plumbing was undertaken on the next machine while still on batch and the next conversion made.

All four machines were checked out and "on continuous" within a 10-day period. Nor was there appreciable loss of product when any of the units went back on the line. Saleable paper was produced at the outset.

Bleach Plant Losses Reduced

Heart of the new measurement system is the Foxboro magnetic flowmeter. Meter setting is from a panel at the wet end of each machine.

Following the process through the mill: Provision was made for increasing unbleached pulp high-density storage capacity from 80 to 180 tons.

By addition of 200 tons of capacity for high-density storage of bleached, it became possible to drastically reduce loss occurring when the bleach plant changes from one pulp to another. This, says Sumner Sollitt Co., general contractor for the project, is "one of the substantial results of the program."

Pre-refining has been introduced into the process immediately after the original high-density tanks for bleached. The new tanks have been located following the new Claflin refiners, installed in a recently-constructed building adjacent to the bleach plant. Pre-refining has produced pulp of improved quality under better control.

Heat, Fiber Losses Reduced

White water from the thickener located above the bleached pulp storage tanks is used for diluting pulp removed from the tanks and is supplemented by mill white water previously wasted. Substantial reduction in heat and fiber losses from the mill system and a corresponding reduction in demand for fresh water have thus been achieved.

The Muskegon conversion has enabled S. D. Warren to eliminate beaters, mixing tanks and attendant maintenance problems. By so doing, considerable mill space has been released, since automatic proportioning requires only a fraction of the floor area needed by batch methods. This valuable space can now be used for storage. Additionally, conversion permits more economical use of personnel.

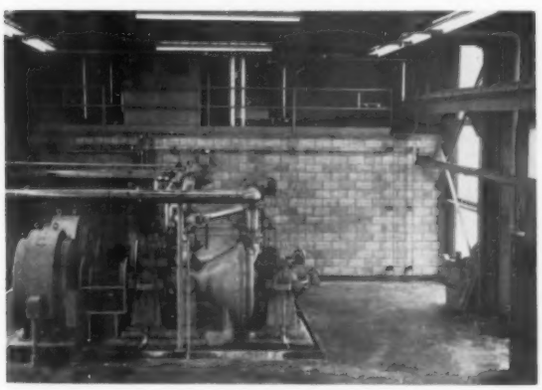
With exception of a new insulated tile white water tank located outside the machine room, all equipment has been installed adjacent to the existing bleach plant, and a minimum of new structure was necessary. Furthermore, complete instrumentation and extensive electrical interlocking make it possible to operate the installation without increasing the manpower previously required to operate the bleach plant alone.

Beater Room Used for Dyes

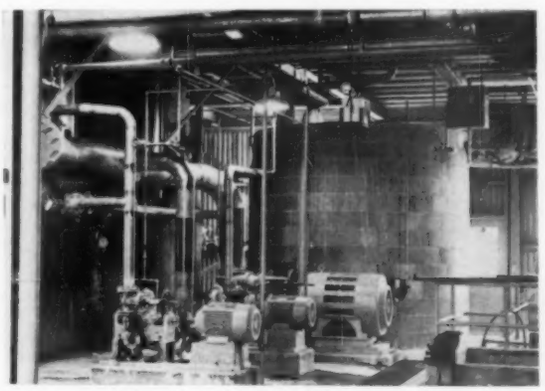
All pulps to be used by the paper machines are pumped to low-density surge tanks in the paper machine area. Controls for these tanks are located on the central panel in the wet room. These controls include pumps, agitators, header pressure controls and stock consistency.

Use for a portion of the old beater room was found in installation of a completely new system for the mixing, storage and distribution of dyes to the paper machines.

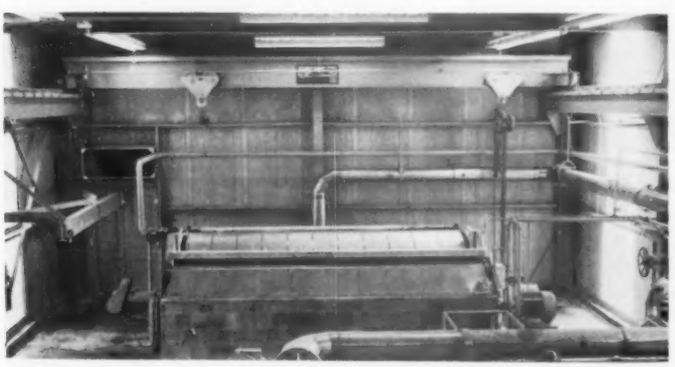
All materials are brought together and measured continuously through the magnetic flow meters into stainless steel hoppers, one for each paper machine. The furnish flows from these hoppers to mixing chests and from there through jordaning and refining equipment to the four machines.



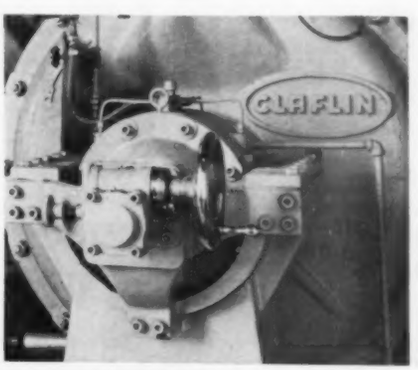
HARDWOOD AND PINE receive "separate treatment" in Emerson Claflin refiners at Muskegon to bring them to proper level of development prior to blending and final treatment. Purchased pulp is treated in a jordan.



TILE SEAL TANK for thickener also acts as collecting point for white water. Large Goulds pump is for low-pressure dilution to high-density towers; two small Goulds pumps are for high-pressure dilution.



WALL OF REFINER ROOM CAN BE REMOVED so that Manning, Maxwell & Moore crane can be run outside the building in order to lift large loads.



TEMPERATURE ELEMENT on Claflin measures differential temperatures for refiner control when running in parallel.

. . . CONTINUOUS BLENDING AT MUSKEGON

Another Industry First

Foxboro systems of stock proportioning were provided for all machines. No other mill, it is claimed, is furnishing stock to so many papermaking units with this type of equipment.

Four pulps—with consistency closely controlled—are pumped from tile or tile-lined chests to circulating headers, from which stock passes through control valves to the mixing chests of the individual machines. Three various dyes may be metered simultaneously to three of the machines. The fourth—which produces unbleached grades occasionally—has piping to control stock through the same valves that usually control bleached stock and also has controls for a fourth dye. Size, acid, alum and wet end additives are controlled by similar equipment.

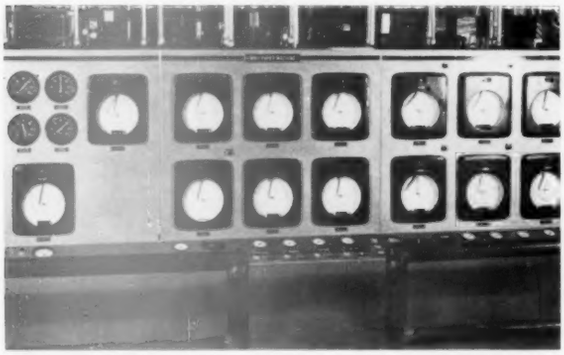
In addition to bleach room controls, a thickener panel and a central panel for miscellaneous control functions, Foxboro supplied four standard stock blending systems—one for each of the four machines.

Typical is the panel supplied for No. 1. This is a four-stock flow system —hardwood, purchased pine, bleached Central pine and broke. It ratios up to four dyes and three additives (alums, fillers, acids and sizes) simultaneously. Dye and additive flows are metered by new small magnetic flow meters of 1/10-, 3/16- and 1/2-in. size. Stocks use the 2-, 3- and 4-in. sizes (the latter for total stock flow). Also included on the panel is a machine pH controller (Beckman), correcting pH by governing addition of alum. Operating console contains percentage setting mechanisms; push buttons; pneumatic and electric switching (to change from continuous to batch operation if necessary); integrators for important stocks, dyes and additives, and low-flow alarms for stock.

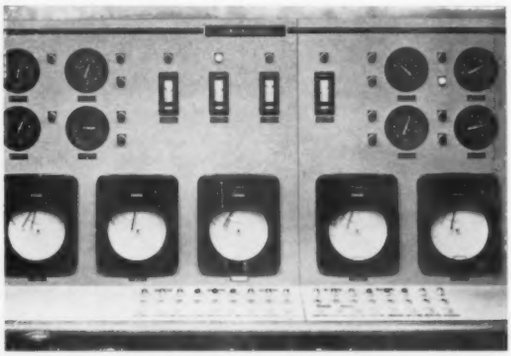
Essentially the same instrumentation was provided for each of the other three machines.

Structural Additions at Minimum

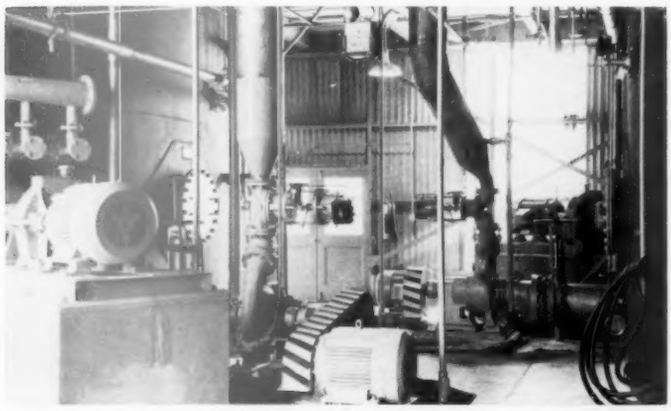
Proportioning system involved a minimum of structural additions. Room for pre-refining purchased pulp and for an extensive dye tank installation was found in the existing beater building. The three new tile stock tanks, one new tile-lined machine chest and new tile lining for an existing steel tank were provided. Stainless steel piping was used for pulp and plastic piping for dyes. Nerve centers of the operation are the central control panel for the pulps prior to being pumped through the circulating loops and individual control panels for each machine.



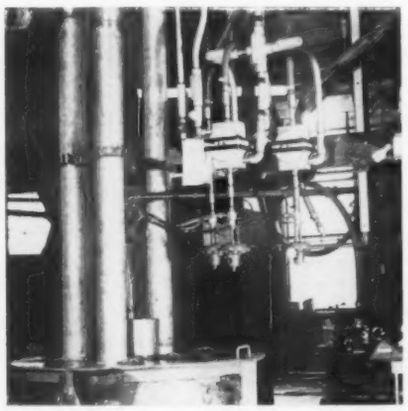
NO. 1 PAPER MACHINE PANEL is four-stock flow system that ratios up to four dyes and three additives. Essentially the same Foxboro instrumentation was provided for the other machines. Beckman pH meters are used.



A NERVE CENTER is central Foxboro control panel for pulps prior to being pumped through circulating loops.



HIGH-DENSITY TOWERS HOLD (l) refined pine and (r) refined hardwood. Pumps furnish stock to surge tanks.



DYE METERS supplied by Foxboro are located at hopper.

Men Responsible for Muskegon's Efficient Operation . . .

Frank W. Roberts
Mill Manager

William H. Marra
Technical Service Mgr.

W. Lawrence Pennell
Production Supt.

Charles S. Russell
Production Supt.

William A. Wrase
Chief Engineer

Hugo J. Hotz Jr.
Technical Director

Philip J. Hinkley, Pulp Mill Supt., at Claflin motors

Robert H. McBride, Paper Machine Supt., at No. 2 paper machine panel

Richard C. Tarr, Asst. Technical Service Mgr., at thickener panel

PRINCIPAL SUPPLIERS TO S. D. WARREN, MUSKEGON

Stock Treatment System

Agitators: Improved Machinery Inc.
Consistency Regulators: DeZurik Corp.
Control Panels: Foxboro Co.
Motor Controls: Allen-Bradley Co.
Conveyors: W. A. Melchior
Heating, Ventilating Equipment: Young Radiator Co.
High-Density Storage Tanks
Steel Work: Graver Tank & Mfg. Co.
Tile Work: Kalamazoo Tank & Silo Co.
Dilution Equipment: Improved Machinery Inc.
Instrumentation: Foxboro Co.
Motors (Induction): Reliance Electric & Engineering Co.
Refiner Motors (Synchronous): Electric Machinery Mfg. Co.
Pumps: Goulds Pumps Inc.
Refiners (Emerson Claflin): John W. Bolton & Sons Inc.
Thickener (8- × 16-ft.): Improved Machinery Inc.
Thickener Vat (Tile): Kalamazoo Tank & Silo Co.
Valves (Stock): Fabri-Valve Co. of America.
Valves (Control): Grinnell Co. Inc.

Stock Proportioning System

Agitators (Stock Surge Chest): Improved Machinery Inc.
Chests (Stock Surge): Kalamazoo Tank & Silo Co.
Consistency Regulators: DeZurik Corp.
Control Panels: Foxboro Co.
Motor Controls: Allen-Bradley Co.
Magnetic Flow Meters: Foxboro Co.
Motors: Reliance Electric & Engineering Co.
Pumps: Goulds Pumps Inc.
Dye Tanks (Stainless Steel): Muskegon Boiler Works
White Water Tank (Insulated): Stebbins Eng. & Mfg. Co.

Major Construction Contractors

General Contractor: Sumner Sollitt Co.
Engineering: Sumner Sollitt Co.
Electrical: Hall Electric Co.
Piping: Rowland Tompkins & Co.
Instrumentation: Mercury Piping Co.
Structural Steel: Steel Fabricating Co.
Sheet Metal Work: Livingston Sheet Metal Co.
Insulation: M. S. Knee Co.

LOG CONTROL STATION IS HEART OF OPERATION at Thilmany Pulp & Paper. Here, operator has control of log flow, handling barker gates as well as "five fingers" (foreground).

Woodroom Rebuild Ups Output . . .

and efficiency at Thilmany Pulp & Paper. Company officials call installation "unique in the industry." Five goals achieved

● Nearly 50% reduction in manpower has been realized at the redesigned woodroom of Thilmany Pulp & Paper Co., Kaukauna, Wis.

Prior to the rebuild, operation was on a three-shift basis, five men to a shift. Now, a foreman and two workers are assigned to the woodroom proper, while a fourth man takes charge of the log pond. According to Supt. Paul H. West, this crew "more than keeps up with the chip demand of the 300-ton kraft pulp mill."

Thilmany's Project

The project—carried out by Thilmany crews with Pulp Mill Engineer Lowell Schmidt in charge—was designed to: (1) improve bark removal; (2) handle 100-in. logs up to 24-in. dia.; (3) realize hourly output of 60 cords; (4) reduce manual labor, and (5) operate with minimum manpower.

Target Since 1950

These goals were accomplished by lengthening the existing 12-ft. drum barker from 45 to 65 ft. and installing a second 12- × 65-ft. barker; developing a log control system that eliminates the inside jack ladder, and installing a 15-knife chipper and a rotary chip feeder with cyclone and surge bin.

Says Supt. West: "This project represents the goal we've had in mind since 1950, when we made changes that first permitted use of 100-in. wood. We're entirely pleased with the results."

Draw Bridge Feed

A "draw bridge" at the second jack ladder separates it from the first. The jack ladder operator controls this bridge to feed logs into either of the drum barkers. When the bridge is raised, logs fall to a conveyor to No. 1 barker; when closed, logs are diverted to No. 2.

The draw bridge is counterbalanced and pneumatically controlled. Depending on log flow, operator switches input to the drums every 3 to 5 min. on an automatic horn signal. Hot pond and jack ladder account for two of the four-man crew.

Bark Burned as Fuel

Each of the two barking drums is a 65-ft. unit having three sections. First two sections are dry, while the third is operated wet and uses up to 400 gpm waste water from the evaporators (same as is used in the 50- × 250-ft. hot pond).

Water and bark flow to a drag chain bark conveyor located between the counter-rotating drums. This conveyor has 30 ft. of perforated drain plates to

permit water run-off. Bark is conveyed to two bark hogs and eventually burned as fuel.

At the drums' discharge end is a 36-in. × 65-ft. belt conveyor moving at 180 fpm and capable of operating in either direction.

A Thilmany Design

At the chipper end is a unique device designed at Thilmany. It is known as "five fingers" simply because it consists of five 4- × 4-in. metal bars that can be raised to a height of 6 in. either singly or collectively to block the flow of logs. It is at this control point that the third man is stationed. He has complete control of log flow, being able to operate barker gates as well as "five fingers."

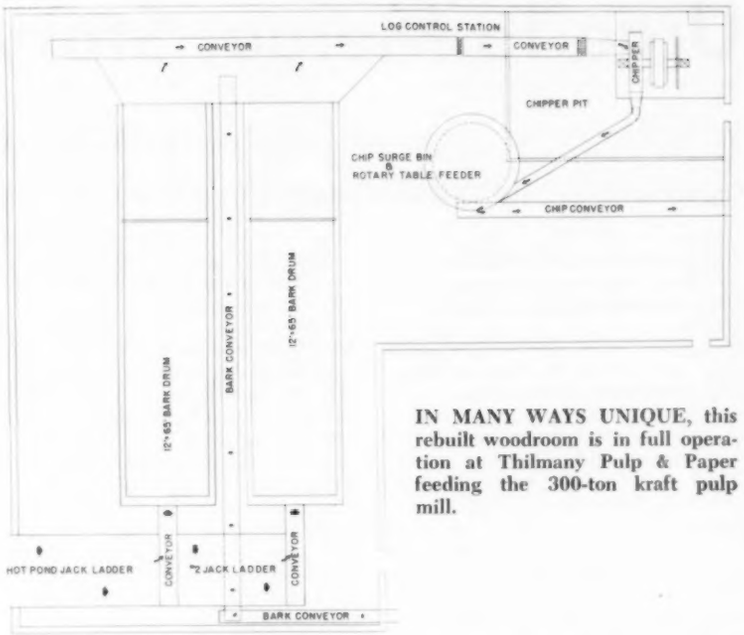
Then follows the second conveyor—36 in. wide, 17 ft. long—that leads directly to chipper spout. The belt travels at 225 fpm. An electric eye circuit can stop operation should need arise.

The chipper—located in a 25- × 37- × 10-ft. pit—has a 110-in. dia. disc with 15 knives, is powered by a 1,250-hp synchronous motor having 300% pull-out torque.

Featured at the chipper is the expandable spout. Ordinary maximum chipping diameter is 24 in. A pneumatic control, however, raises the upper section of the throat to increase clearance to 26 in. Both large and small diameter sticks can be chipped efficiently because of a specially-designed "V" spout. (Wood used at Thilmany averages about 7-in. dia.)

40-Min. Blade Change

To facilitate blade changes—ordinarily a once-a-day operation—a large disc brake is used to stop the chipper. Two men change the blades in about 40 min., using a pneumatic impact wrench to loosen the holding bolts on the back side.



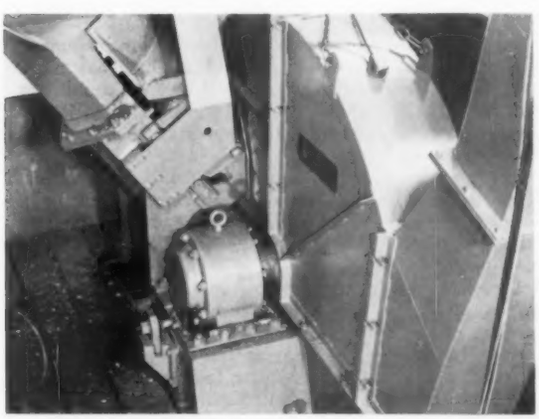
IN MANY WAYS UNIQUE, this rebuilt woodroom is in full operation at Thilmany Pulp & Paper feeding the 300-ton kraft pulp mill.

Chips are blown to a cyclone above the chip surge bin. This is a rise of about 30 ft. and a run of 28. The Thilmany-built bin is 17 ft. in dia. and has a 10-ft. vent.

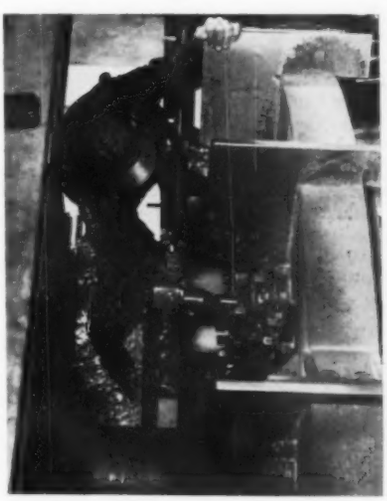
Chips fall into the surge bin, from which a 13-ft. dia. rotary plate feeder meters them to the chip conveyor, by which they are carried to storage. High- and low-level switches on the surge bin start and stop the feed table to maintain a chip seal or air lock at the bottom of the bin.

Principal Suppliers to Thilmany Woodroom:

Chipper:
D. J. Murray Mfg. Co.
Chipper Motor:
Marathon Electric Mfg. Co.
Drum Barker:
Fibre Making Processes Inc.
Drum Barker Motors:
General Electric Co.
Conveyors, Rotary Plate Feeder:
Link-Belt Co.
Conveyor Belting:
Voss Belting & Specialty Co.
Lubricating Equipment:
Lincoln Engineering Co.
Log Control, Cyclone, Surge Bin:
Thilmany Pulp & Paper Co.



CHIPPER IS LOCATED IN 10-FT. PIT, is 110 in. in dia., has 15 knives.



LOOSENING hold bolts on back of chipper. Blade change is 40-min. job.

Urge to Merge: Story of 50's

Why the wave of mergers and acquisitions in the past decade? A management consultant discusses the picture exclusively for PULP & PAPER.

By EDWARD McSWEENEY
Vice President, Treasurer
Perkins-Goodwin Co.

● "Decade of Mergers and Acquisitions" may well be the business historian's description of the 1950s.

The New York Times carries regular reports of such transactions. In a recent issue of *The Business Record* (monthly publication of the National Industrial Conference Board) four pages of small type were required to list mergers and acquisitions reported in a 30-day period. And experts estimate that, due to SEC regulations and closely-held businesses, less than 50% are actually reported to the public.

Many and varied are the forces that have been prime factors in the mergers and acquisitions of the past decade, abridged lists of which appear with this article. Personal research and interviews have led to definite conclusions, and direct quotations often convey the message far better than academic discussion.

Selling at Distress Prices

Estate taxes were certainly mentioned most frequently when privately-owned companies chose to join the larger publicly-held firm.

"The government forced us into selling."

"We realized that all our eggs were in one basket and had to face the fact that inheritance taxes might force our heirs to sell all or part of this business, probably at distress prices. Our stock had no value, so we decided that what we should have was a listing and a good record of performance."

"We have tried to build up reserves to provide for inheritance taxes, but capital requirements for mill modernization and maintaining competitive standing were so great that we couldn't gamble on sufficient time to build up reserves to pay estate taxes."

"We know that many privately-held concerns are establishing foundations that will perpetuate heirs for another generation or two. But we decided that the individual outside resources of our heirs were not sufficient to follow that route."

COMMENT: Although estate taxes and problems of liquidity are of prime importance to the seller, it is evident that there are a number of other fears and factors below the surface that influence decisions to sell or merge.

For the Independent: Two Choices

Head of an important company that entered into a tax-free stock swap summed it up when he said: "There were 15 families living off this business in the style to which they had become accustomed. When I realized what a tremendous amount of capital would have to be tied up in fixed assets, I just didn't want to take the responsibility and played it safe."

Head of the other part of that merger said: "We decided that we were being forced into this business; and while it looked as if we were paying a mighty high price, it not only gave us a jump on our competitors but we were also convinced that we had opportunity to get into that business more cheaply and quickly than we could have had we tried to do it on our own. So far everything indicates that we were right on all counts."

COMMENT: On the other side of the coin—there are a number of small firms that have refused to be panicked by the rush toward bigness and have developed specialties and products and integrated into their prime market. They are probably in a stronger position today than ever before, which leads to some of the other factors involved.

Watch That Middle Management

Phenomenon of the postwar period has been the number of privately-owned or closely-held firms in which middle management has been either weak or almost non-existent. Undoubtedly, World War II and Korea (to say nothing of the draft) were largely responsible for so many companies finding themselves in the position described by the song, "They're Either Too Young or Too Old."

One man who sold out a few years ago with a good management contract said: "My brother and I each have one son, so we held on, waiting for them to take over. When one of the boys came out of the service, he decided he didn't want to stay in the business. And when the other boy didn't measure up to the challenge, we decided to play safe and sell. We considered turning the business over to so-called professional management, but we decided against that move when we realized that we couldn't or didn't want to give incentives in the form of stock options and other benefits."

COMMENT: Lack of or weakness in middle management is actually one of the most important factors in deciding to sell. On the other hand, one able and ambitious heir with tremendous confidence in his own capacity and ability elected to throw in with a big company because it offered him a greater challenge and a bigger opportunity to show his capabilities and talents. He is now beginning to wonder if he properly evaluated the hazard of big company pressures.

"Cold Gray Dawn of Reality . . ."

ED MCSWEENEY: "A few years ago I decided to do some personal research in an attempt to isolate the forces that were causing this wave of mergers and acquisitions. Whenever a good opportunity presented itself, and on a completely informal basis, I had long discussions with men who were considering selling, acquiring or merging—usually on a tax-free swap of stock, in most instances coupled with long-term management contracts for the key people in the firm being acquired. Just as interesting were a number of informal interviews with the principals after the deals had been made, a few after the honeymoon had worn off and the cold gray dawn of reality was beginning to cast its ugly light."

Problem of the 60s: Obsolescence

As we move further into the age of thermonuclear power and outer space there is growing concern about scientific obsolescence. One pulp and paper industry leader summed up this fear when he said:

"In the oil and chemical fields giant multimillion-dollar installations are almost obsolete before they are completed. Just a few years ago the DC-7 was the darling of the airlines, and now it is old hat and rapidly being converted to air freight. Major companies in every field have hundreds and in some cases thousands of people whose jobs are to make present products obsolete before competitors do. In our field there are at least four major programs being carried on behind locked doors aimed at making present methods of paper manufacture obsolete."

The underlying concern is why the buyer trying to lure a privately-held company into his corporate structure points to his research laboratories and emphasizes the ever-growing percentage of sales dollar going into research and development. He usually neglects to mention that his men in white coats are working on applied or product research, and the pure or fundamental research is being done at the leading scientific institutions and non-profit research laboratories here and abroad.

Only Way to Stand Still

There are two basic ways to grow. Soundest is internally—by getting a larger share of the present market or by development of new products and cultivation of new markets.

Quickest is by acquiring a company offering new products and geographic location that will allow quick penetration into markets not formerly served.

The new batch of handsome and profusely illustrated annual reports emphasize growth and diversification. Product and market diversification are highlighted as major factors in growth. The ever-higher percentage of total sales from new products and new markets gives the impression that research and product development programs are paying off and are the reason for this diversification and growth. The fact is that most of this growth and diversification is due to acquisitions and mergers.

COMMENT: It would be difficult if not impossible to point to one major pulp and paper company that hasn't had a series of mergers and acquisitions and that isn't doing everything possible to grow both internally and externally.

Upping Stock Values

Because a stock option is only valuable if the market price increases, this "fringe benefit" has become a factor in the urge to merge. Quickest ways to increase the value of a stock are: (a) to increase earnings by stepping up cash flow; (b) to improve relative position within industry; (c) maintain a consistent policy of cash and stock dividends; (d) growth; (e) to improve ratio between earnings and market price.

Quickest way to achieve most of these is by mergers and acquisitions.

The Washington Picture

At times there are indications that the administration is stepping up efforts to slow down the wave of mergers and acquisitions. An infrequent anti-trust action seems of little interest or concern to the great majority of buyers and/or sellers. In an election year, however, there is a new added concern. A man close to Washington has said, "Congress is taking a closer look at the rush toward bigness, and there are rumors that a 'sleeper' is in the works that would force the buyer to prove that an acquisition was in the public interest.

"If there should be a change in administration, the favorable business climate that has existed under President Eisenhower would quickly dissolve and create opportunity for all liberal anti-business elements in Congress to have a field day. This possibility has probably been one of the underlying reasons for the step-up in mergers and acquisitions in recent months, and it could continue right up until election day."

COMMENT: Business has done a very poor job of telling the public (who in turn influences Congress) why "bigness" by itself is not a crime. As our country grows and our economy becomes more complex any business that is an integral part of or essential to that growth must continue to grow. Business must explain why integration of raw materials, regionalization of markets and new products help eliminate waste and make more goods available to more people at a lower cost. Business must go beyond the role of the downtrodden taxpayer and seriously concern itself with preserving the proper relationship between big and small business. Business must face the fact that while bigness is essential to security and economic well being, small business must be protected if we are to preserve our present way of life.

Conclusion

Only time will tell whether the current wave of mergers and acquisitions has been built on a firm foundation or on political quicksand. The situation is much too important and complex to do any more than touch on some of the major factors involved, in the hope that they will stimulate thinking.

Mergers in Pulp, Paper Field—1953-58

ABRIDGED LIST OF COMPANIES engaged wholly or to a substantial extent in the paper industry, stocks of which are publicly held, which have acquired other companies by purchase or merger since 1953.
(Acquiring or surviving company listed in capitals; business acquired or affected is indented below)

ALBEMARLE PAPER MANUFACTURING CO., Richmond, Va.
- Raymond Bag Co., Middletown, Ohio
- Tredegar Co., Richmond, Va.
- Interstate Bag Co., Walden, N.Y.

ALLIED PAPER CORPORATION, Chicago, Ill. (Formerly THOR CORP.)
- Allied Paper Mills, Kalamazoo, Mich.
- A.W.P. Corp., Albany, N.Y. (Allied-Albany)
- Osborn Paper & Envelope Co.
- Mid-West Paper & Envelope Co.
- Mercury Envelope Co., San Jose, Calif.

AMERICAN BOX BOARD CO., Grand Rapids, Mich.
- Lewis Container Co., Wis.
- Detroit Container Corp.

BERGSTROM PAPER COMPANY, Neenah, Wis.
- Whale Safety Paper Co., Waupaca, Wis.

BROWN CO., Berlin, N.H.
- Research Chemical Co.
- Granite State Veneer Co.
- Stratford Realty Co.

CAMP PAPER (CAMP MANUFACTURING CO.), Franklin, Va.
- Wortendryke Mfg. Co., Richmond, Va.
- (Charmin merged with Procter & Gamble in 1956)

Mergers in Pulp and Paper Field—1953-58

CENTRAL FIBRE PRODUCTS CO., Quincy, Ill.
Mapes Consolidated Mfg. Co., Griffith, Ind.
CHAMPION PAPER & FIBRE CO., Hamilton, Ohio
Midwest Bottle Cap Co.
CHARMIN PAPER MILLS, INC., Green Bay, Wis.
Paper Corp. of Am. mill at Sheboygan, Wis.
(Charmin merged with Procter & Gamble in 1957)
CONTAINER CORP. OF AMERICA,—Chicago, Ill.
Control of MENGEL (now about 93% owned)
Traver, Chicago
Wayne Paper Box Co.
Garmold, Inc.
CORNELL PAPERBOARD PRODUCTS CO., Chicago, Ill.
National Carton, Chicago
Superior Paper Products, Inc., Marion, Ind.
Economy Box & P.P. Co., Marion, Ind.
Waters Co.
CROWN ZELLERBACH CORP., San Francisco, Calif.
St. Helens Pulp & Paper Co., St. Helens, Ore.
Bertram Paper Products Co.
Gaylord Container Corp., St. Louis, Mo.
Waxide Paper Co., Kansas City, Mo.
Thru C. Z. (Canada), Canadian Western, Elk Falls Co., Ltd.
DOESKIN PRODUCTS, INC., New York, N.Y.
Sitroux, Inc., N.Y.
Kela Gas & Oil Co.
EASTERN CORP., Bangor, Maine (and N.Y. City)
Royal Lace Paper Works, Brooklyn, N.Y.
(Company merged in 1958 with Standard Packaging Co.)
EDDY PAPER CORP., Chicago,Ill.
Part interest in No. Carolina Pulp Co.
(Company merged in 1957 with Weyerhaeuser Timber Co., Tacoma, Wash.)
FEDERAL PAPER BOARD CO., Bogota, N.J.
National Paper Board Co., New Haven, Conn.
Grant Paper Box Co., Pittsburgh, Pa.
Morris Paper Mills, Chicago
Frankenberg Bros., Inc., Columbus, Ohio
Federal Glass Co., Columbus, Ohio
FIBREBOARD PAPER PRODUCTS CO., San Francisco, Calif.
(Formerly PABCO)
Acq. half int. of Crown Z. in Fibreboard; changed Pabco name to F.P. Co.
HAMILTON PAPER COMPANY, Miquon, Pa.
Michigan Paper Co., Plainwell, Mich.
GAIR (Robert) CO., INC., New York, N.Y.
Angelus Paper Box Co., Los Angeles, Cal.
Harvey Container, Michigan
Southern Advance Bag & Paper Co., Inc., Boston, Mass.
Great Southern Box Co.
(Gair merged with Continental Can Co.)
HAMMERMILL PAPER CO., Erie, Pa.
Robertson Process Co.
Watervliet Paper Co., Watervliet, Mich.
HINDE & DAUCH, Paper Co., Sandusky, Ohio
Corrugated Paper Box Co., Ontario
(H. & D. merged with West Virginia P. & P. Co.)
HUDSON PULP & PAPER CO., New York, N.Y.
Hammond Bag & Paper Co., Wellsburg, W. Va.
INTERNATIONAL PAPER CO., New York, N.Y.
Canadian properties of BROWN CO. of Berlin, N.H.
A. M. Collins & Co., Philadelphia, Pa.
Long Bell Lumber Co.
KIMBERLY-CLARK CORP., Neenah, Wis.
Neenah Paper Co., Neenah, Wis.
International Cellucotton Products Co., Chicago
Peter J. Schweitzer, Inc., New York, N.Y.
Munising Paper Co., Munising, Wis.
MARATHON CORP., Menasha, Wis.
Northern Paper Mills, Green Bay, Wis.
Manchester Paper Boxes, Ltd. (Canada)
(Marathon merged with American Can Co.)
MEAD CORP., Dayton, Ohio
Chillicothe Paper Co., Chillicothe, Ohio
Jackson Box (including Industrial Container Co. and Delavans)
Atlanta Paper Co., Atlanta, Ga.
Hurlbut Paper Co., South Lee, Mass.
Ottawa River Paper Co., Toledo, Ohio
Birmingham & Prosser, Kalamazoo, Mich.
NATIONAL CONTAINER CORP., New York, N.Y.
Jaite Co., Jaite, Mich.
Seaboard Container, Philadelphia, Pa.
(Nat'l Cont'r merged with Owens-Illinois Glass Co.)

NATIONAL VULCANIZED FIBRE CO., Wilmington, Del.
Marshall Bros., Wilmington
NEKOOSA-EDWARDS PAPER CO., Port Edwards, Wis.
Racquette River Paper Co. (mill) from ORCHARD, which company acquired R.R.P. CO. in 1956)
ORCHARD PAPER CO., St. Louis, Mo.
Racquette River Paper Co., Potsdam, N.Y.
OXFORD PAPER CO., New York, N.Y.
Champion-International Co., Lawrence, Mass. (1958)
POTLATCH FORESTS, INC., Lewiston, Idaho
Fernstrom Paper Co., Pomona, Calif.
PUGET SOUND PULP & TIMBER CO., Bellingham, Wash.
Pacific Coast Paper Mills, Bellingham, Wash.
RIEGEL PAPER CO., New York, N.Y.
Norman Lumber Co.
Flexible Packaging Plant, Indiana
ST. REGIS PAPER CO., New York, N.Y.
Superior Paper Products Co., Pittsburgh, Pa.
Cambridge Moulded Products Co.
Michigan Panelyte Moulded Products Co.
Pollock Paper Corp., Dallas, Tex.
General Container Corp., Cleveland, Ohio
Chester Packaging Products, Yonkers, N.Y.
Ajax Box Co., Chicago, Ill.
Gummed Products Co., Troy, Ohio
Pacific Waxed Paper Co., Seattle, Wash.
Rhinelander Paper Co., Rhinelander, Wis.
Michigan Midland Products
Part int., Growers Container Co., Calif.
J. Nils Lumber Co. and St. Paul & Tacoma Lumber Co.
SCOTT PAPER CO., Chester, Pa.
Hollingsworth & Whitney, Boston, Mass.
Detroit Sulphite Pulp & Paper Co., Detroit, Mich.
Int. in Westminister Paper Co., British Columbia
San Cristobal
SONOCO PRODUCTS CO., Hartsville, S.C.
National Paper Co., Atlanta, Ga.
SORG PAPER CO., Middletown, Ohio
Blotting Paper Div. of WREN'S PAPER CO.
STANDARD PACKAGING CO., New York, N.Y.
Missisquoi Corp., Sheldon Springs, Vt.
Modern Packages, California
Fuller Label & Box Co., Pittsburgh, Pa.
Standard Cap & Seal Co. (Canada)
Allegheny Label Co., Pittsburgh, Pa.
Gebhart Folding Box Co., Dayton, Ohio
Bradley & Gilbert Co.
Johnson Foil Co., St. Louis, Mo.
Eastern Corp.
STONE CONTAINER CORP., Chicago, Ill.
Artkraft
W. C. Ritchie, Chicago
Western Paper Box Co.
SUTHERLAND PAPER CO., Kalamazoo, Mich.
Ft. Orange
Ft. Orange Paper Co., Castleton-on-Hudson, N.Y.
STRATHMORE PAPER CO., West Springfield, Mass.
Keith Paper Co., Turners Falls, Mass.
UNION BAG-CAMP PAPER CORP., New York, N.Y.
Camp Manufacturing Co., Franklin, Va.
Allied Container Corp., Boston, Mass.
UNITED BOARD & CARTON CO., New York, N.Y.
Densen-Banner Co.
S. D. WARREN CO., Boston, Mass.
Central Paper Co., Muskegon, Mich.
WEST VIRGINIA PULP & PAPER CO., New York, N.Y.
Hinde & Dauch Paper Co., Sandusky, Ohio
2 Multiwall Bag Plants of Arkell and Smiths
WEYERHAEUSER TIMBER CO., Tacoma, Wash.
Eddy Paper Corp., Chicago, Ill.
Kieckhefer Container Corp., Chicago, Ill.
W. A. Woodward Lumber Co.

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OTHER INDUSTRY COMPANIES' ACQ. of PAPER COS.
AMERICAN CAN CO., New York, N.Y.
Dixie Cup Co., Allentown, Pa.
Marathon Corp.
CONTINENTAL CAN CO., New York, N.Y.
American Paper Goods Co., Kensington, Conn.
White Cap Co.
Robert Gair Company, N.Y.
Hazel-Atlas Glass Co.
Canadian Crown Corp.
Cochran Foil Co. (Joint venture).

DOW CHEMICAL CO.
Dobeckmun Co., Cleveland (and Ben-Mont Papers, Bennington, Vt.)
DIAMOND GARDNER CORP. (Formerly Diamond Match Co.) New York, N.Y.
General Packaging Co., Chicago, Ill.
Hartman Fibre Co. (England)
Gardner Board & Carton Co., Middletown, Ohio
LILY TULIP CUP CORP., New York, N.Y.
Old Town Co., Maine
Moulding Dept. of Am. Lace Paper Co., Milwaukee, Wis.
LUDLOW MFG. & SALES CO., Massachusetts
MacLauren Jones Co., Brookfield, Mass.
Stocker Mfg. Co., Netcong, N.J.
MINNESOTA MINING & MFG. CO.
Hartford City Paper Co., Hartford City, Indiana
OLIN MATHIESON CHEMICAL CO., New York, N.Y.
Brown Paper Mill Co., Monroe, La.
OWENS-ILLINOIS GLASS CO., Toledo, Ohio
National Container Co., New York
PROCTER & GAMBLE CO., New York
Charmin Paper Mills, Green Bay, Was.
RAYONIER INC., New York, N.Y.
Alaska Pine
U. S. PRINTING & LITHOGRAPH CO., Cincinnati (& N.Y. City)
L.P.&L.Co., San Francisco, Calif.
BUTLER COMPANY, Chicago, Ill.
Rex Paper Co., Kalamazoo, Mich.
CARPENTER PAPER CO., Omaha, Nebr.
2 paper dist. cos. in Seattle, Wash.
1 distributor in Denver, Colo.
1 distributor in Sioux City, Iowa
CONNELLY CONTAINER, Pencoyd, Penna.
Pencoyd Paper Mill, Pencoyd, Pa.
HOPPER PAPER CO., Taylorville, Ill.
Modena Paper Mills, Reading, Pa.
HUSS LUMBER CO., Chicago, Ill.
National Container Co.'s mill at Ontenagon, Mich.
HOLLINGSWORTH & VOSE, East Walpole, Mass.
American Wood Board Co., Schuylerville, N.Y.
Blandy Paper Co., Greenwich, N.Y.
CRANE & CO., Dalton, Mass.
Byron Weston Co., Dalton, Mass.
LYONS FALLS PAPER CO.
Gould Paper Co., Lyons Falls, N.Y.

Supplemental Mergers—1958-60

Supplementing and extending list of June 2, 1958

COMPANIES engaged wholly or to a substantial extent in the paper industry, stocks of which (in the main) have a public interest, which have acquired other companies by purchase or merger, or an important interest therein, according to public announcement up to March 31, 1960.
(Acquiring or surviving company shown in capitals; business acquired or affected is indented below)

A&P CORRUGATED BOX CORP., Lowell, Mass.
Plant of Forence Stove Co.
(A&P later merged with Mead)
ABITIBI POWER & PAPER CO. LTD., Toronto
Pembroke Mills Ltd., Pembroke, Ont.
AMERICAN BOX BOARD CO., Grand Rapids
Wolverine Carton Co., Grand Rapids
(American Box later merged into new company, Packaging Corp. of America)
AMERICAN ENVELOPE CO., Chicago
Brown Superior Paper Goods Co., Chicago
(Amer. Ep. later merged with Kimberly-Clark)
AMERICAN PAPER GOODS CO., Jackson, Mich.
Envelope mfg. facility of Robert Gair
BANCROFT TISSUE MILLS, INC.
Bancroft Paper Mills, Bancroft, Mass.
BATHURST POWER & PAPER CO. Ltd., Canada
Norwood Box Co. Ltd.
BECKETT PAPER CO., Hamilton, Ohio
Hoover Div., Lima-Hamilton Corp.
BEMIS BRO. BAG CO.
Rose Ribbon & Carbon Mfg. Co., Harrison, N.J.
BIRD & SON INC.
Geo. W. Dinsmoor Co.
BOISE CASCADE CORP., Boise, Ida.
Ames Harris Neville Co., San Francisco
BUTLER CO., Chicago, Ill.
Rex Paper Co., Kalamazoo, Mich.
CARTON CRAFTSMEN INC., Chicago, Ill.
National Carton Co., Joliet, Ill.
(Carton Craftsmen later acq. by St. Regis.)
CHAMPION PAPER & FIBRE CO., Hamilton, O.
Half int. NRC Vaculite Corp., Cambridge
Buffalo Envelope Co., Buffalo, N.Y.
Wertgame Paper Co., Kans. City (jobber)
Montag Brothers Inc., Atlanta, Ga.
CHEMICAL PAPER MFG. CO.
Crocker-McElvain Co., Holyoke, Mass.
(Chemical later merged Stand. Pkg. Co.)
CONSOLIDATED PAPER CORP. LTD., Canada
Multiwall bag and packaging bus., St. Regis Paper Co., Canada
CONTAINER CORP. OF AMERICA, Chicago
Memphis Corr. Contr. plant of Cont. Can Co.
Arizona Container Corp., Phoenix, Ariz.
CONTINENTAL CAN CO., New York
Fort Wayne Corr. Paper Co. (4 plants subsequently sold)
Gair Woodlands Corp. merged into Southern Pprbd; latter into Cont. Can
CORNELL PAPERBOARD PRODUCTS CO., Chicago
Rathbone, Hair & Ridgeway, Chicago
(Cornell later merged into St. Regis)
CROSSETT PAPER MILLS, Crossett, Ark.
Triangle Paper Bag Mfg. Co., Covington, Ky.
CROWN ZELLERBACH CANADA LTD.
Bridge Lumber Co., Ltd., Canada
CYANAMID OF CANADA LTD.
St. Jean plant of St. Regis Paper Co.
DAVEY CO., Jersey City, N.J.
Constantine Board & Paper Co., Mich.
DIAMOND-GARDNER CORP.
Hoosier Containers, Inc.
New Castle Realty Corp.
(Merged with U.S. Printing & Litho. Co. and named changed to DIAMOND NATIONAL CORP.)
DEXTER (C.H.) & SONS, INC. Conn.
Standard Insulation Co., E. Rutherford, N.J.
DOMINION TAR & CHEMICAL CO. LTD., Canada
Howard Smith Paper Mills Ltd. and subsids., Canada Paper Co., Arborite Co., Ltd., Alliance Paper Mills Ltd. Donnacona Paper Co. Ltd.
DONOHUE BROS. LTD., Canada
Nairn Falls Pulp Co., Cleremont (a former subsidiary of Scott Paper Co.)
EUREKA SPECIALTY CO., Scranton, Pa.
Pee Chee Tape & Label Co., Los Angeles
FEDERAL PAPER BOARD CO., Bogota, N.J.
Sweeney Litho. Co., Belleville, N.J.
Manchester Board & Paper Co., Richmond
FIELD ENTERPRISES, Chicago Publishers
Manistique Pulp & Paper Co., Michigan
FIORI PAPERBOARD INC., Cincinnati, O.
Mill formerly owned by Queen City P. Co.
FLINTKOTE CO.
Kosmos Portland Cement
Hankins Container Co., Cleveland, Ohio
Orangeberg Mfg. Co. (Fibre sewer & drain pipe, El. conduits, Poly-plastic pipe)
FREUND (PAUL T.) CO.
H. R. Drake & Sons, Inc. (S-U boxes, Palmyra)
FULTON BAG & PRODUCTS CO.
N. O. plant of Fulton Bag & Cotton Mills.
GENERAL AMERICAN INDUSTRIES CO.
Whitney Paper Co.
HAMMERMILL PAPER CO., Erie, Pa.
Oswego, N.Y. paper mill of Marathon Div.
Beckett Paper Co., Hamilton, Ohio (including Hoover Div. Baldwin-Lima-Ham. Corp.)
HAWTHORNE PAPER CO., Kalamazoo, Mich.
Paper mill in Hollywood, Fla. formerly owned by Pan-American Paper Mills

Mergers in Pulp and Paper Field—1958-60

HERCULES POWDER CO., Wilmington, Del.
Imperial Color Chem. & Paper Co., Glens Falls
HOWARD SMITH PAPER MILLS, LTD., Montreal
Huron Forest Products Ltd., Blind River, Ont.
(Howard Smith acquired by Dominion T & C Co.)
INLAND CONTAINER CORP., Indianapolis
Some plants of General Box Co.
INTERCHEMICAL CORP.
Carbon paper & roll mfg. facilities of H. M. Storm Co.
INTERNATIONAL PAPER CO.
Lord Baltimore Press, Baltimore
INTERSTATE CONTAINER CORP., Glendale
Reading Corrugated Container Corp., Reading, Pa.
United Board & Carton Corp. (merger held up by minority stockholder court actn.)
JOHNS-MANVILLE CORP.
L-O-F Glass Fibres Co., Toledo, Ohio
JOHNSON & JOHNSON (Per. Prod. Corp.)
Cellulose wadding prop. of Stonebridge P. Corp.
K V P CO., Kalamazoo, Mich.
Sutherland Paper Company, Kalamazoo
KEENER TAG MFG. CO., Lancaster, Pa.
Tagcraft Corp., Lancaster, Pa.
KETTERLINUS LITHOGRAPHIC MFG. CO., Phila.
Lockwood Folding Box Co.
KIMBERLY-CLARK CORP.
35% int. Irving Pulp & Paper Ltd., Canada
Société Sopalin, Paris, France
American Envelope Co. (incl. Brown Superior Paper Goods Co., Chicago)
LAWLESS BROS. CONTAINER CORP.
Howe Paper Div. of Hubbs & Howe
LONGVIEW FIBRE CO., Longview, Wash.
Downing Box Co., Milwaukee, Wis.
MARVELLUM CO. OF HOLYOKE, Mass
Nylco Products, Inc., Clinton, Mass.
MEAD CORP., Dayton, Ohio
Excello Paper Prod. Co. (Remainder of stock)
Mead Board Sales, Inc. (Remainder of stock)
Delavans, Syracuse, N.Y. (Remainder of stock)
Armour Leather Co. (Tannery on 35A adj. to Mead's Sylva Division)
Shelby Paper Box Co., Memphis, Tenn.
Lamex, Inc., poly coating plant, Norcross, Ga.
Miller Container Corp., Louisville, Ky.
Grand Rapids Container Co. Michigan
Wrenn Paper Co., Middletown, Ohio
Associated Folding Box Co., Lawrence, Mass.
Plymouth Corp., Lawrence, Mass.
A&P Corr. Box Corp., Lawrence, Mass.
Gibraltar Corr. Paper Co. No. Bergen, N.J.
Ford Motor Co.'s plant in Louisville, Ky.
MIDWEST PAPER TUBE & CAN CO., Milwaukee
Paper tube & can div. of A. Geo. Schultz Co.
MORRIS (PHILIP) INC.
Milprint, Inc., Milwaukee, Wis.
Polymer Industries, Inc., Stamford, Conn.
MOUNT JOY PAPER BOX CO., Mt. Joy, Pa.
Simplex Paper Box Corp., Lititz, Pa.
NARROW FABRIC CO.
Wyomissing Glazed Paper Co., W. Reading, Pa.
Reading Glazed Paper Corp.
United Mfg. Co.
NEW HAVEN BOARD & CARTON CO., Conn.
Wm. W. Fitzhugh, Inc., New York. (merger)
NORTH CAROLINA PULP CO. (Weyerhaeuser)
Bate Lumber Co., New Bern, N.C.
PACKAGING CORP. OF AMERICA
Formed by merger of three companies, viz.,
American Box Board Co., Grand Rapids
Central Fibre Products Co., Quincy, Ill.
Ohio Box Board Co., Rittman, Ohio
PENN-MAR CONTAINER CORP.
Plants of Fibreboard P. P. Co. at Phila. & Balt.
PORTER (H. K.) CO., Pittsburgh, Pa.
Brown Co., Berlin, N.H. (working control)
POTLATCH FORESTS, INC., Lewiston, Ida.
Bradley Lumber Co., Warren, Ark.
Paper cup & food container div. of Cupples-Hesse Corp.
PRICE BROS. & CO., Canada
J. C. Wilson Ltd., Montreal, Canada
RAPID-AMERICAN CORP., Albany, N.Y.
Eastern Tablet Co., Albany, N.Y.
RAP-IN-WAX PAPER CO., Minneapolis
U. S. Packaging Corp., Paterson, N. J.
Cotswold Fibres, Inc., Columbus, Ga.

RIEGEL PAPER CORP.
Amos-Thompson Corp., Edinburgh, Ind.
Bartlett Engineering Co., Rockford, Ill.
RIVER RAISIN PAPER CO., Monroe, Mich.
Lehigh plant, Lancaster, Pa.
River Raisin later merged with Union Bag-Camp
ROCHESTER ENVELOPE CO., INC.
Eastern Tablet Corp. (Ep. div.) Albany, N.Y.
ROMAR TISSUE MILLS, INC.
A new company organized by Robert Belsky to take over Doeskin's Wheelright plant
ST. REGIS PAPER CO.
St. Paul & Tacoma Lumber Co.
Growers Container Co., Salinas, Calif.
F. J. Kress Box Co., Pittsburgh, Pa.
Chemical Packaging Corp., Savannah, Ga.
Cupples-Hesse Corp., St. Louis, Mo.
Lone Star Bagging Co., Houston, Tex. (Including 83% stock of Wagner Bag Co., Utah, 44% stock Lubbock Bag Co. Texas)
Birmingham Paper Co., Birmingham, Ala.
*Schmidt & Ault Paper Co., York, Pa.
Sherman Paper Products Co., Newton, Mass.
*Creamery Package Mfg. Co., Chicago, Ill.
Cornell Paperboard Prod. Co. (including 20% int. in Tenn. Riv. P. & P. Co.) Rathbone, Hair & Ridgeway Box Co. Carton Craftsmen, Chicago
*Howard Paper Co.
*Central Waxed Paper Co., Chicago, Ill. (pending)
Superior Paper Products, Marion Ind.
20% int. in Brazilian Co.
13% int. in Consolidated Paper Corp. Ltd.
American Sisalkraft Corp., Attleboro, Mass.
*Not completed to date
ST. LAWRENCE CORP., LTD., Montreal
Maj. int. in HINDE & DAUCH PAPER CO. Ltd.
SEALRIGHT-OSWEGO FALLS CORP.
Int. of Nashua Corp. in Canadian Sealright Co.
SIMPSON-LEE PAPER CO.
Merger of Simpson and Lee Paper Cos.
SONOCO PRODUCTS CO., Hartsville, S.C.
Newton Paper Co., Holyoke, Mass.
STANDARD PACKAGING CORP.
Basca Mfg. Co., Indianapolis (foil, plastics)
Chemical Paper Mfg. Co., Holyoke (including Crocker-McElwain Co., Holyoke)
STONE CONTAINER CORP.
Campbell Box & Tag. Co., South Bend, Ind.
Acme Carton Co., Chicago, Ill.
Delmar Paper Box Co., Cincinnati, Ohio
SUTHERLAND PAPER CO., Kalamazoo
Monarch Match Co., San Jose, Calif.
Superior Match Co., Chicago
(Sutherland later merged with KVP Co.)
SWEETS LABORATORIES, INC., Phila.
Pencoyd Paper Co. (affil. of Connelly Contr.)
TRAUSO ENVELOPE CO., Chicago
Env. div. of Wolf Bros., Philadephia
TRENTON PAPER CO.
Eagle Paper Mills
TWORGER, ARTHUR
Edwards Box & Paper Corp., Gloversville, N.Y.
UNION BAG-CAMP PAPER CORP.
Argent Lumber Co. (Lumber and timberlands)
Miller & Miller, Inc., Atlanta, Ga.
River Raisin Paper Co.
WEST VIRGINIA PULP AND PAPER CO.
Virginia Folding Box Co., Richmond, Va.
WESTERN KRAFT CORP., Oregon
Western Corrugated, Inc., Beaverton, Ore. and Wenatchee, Wash.
WESTMINISTER PAPER CO., British Col.
Crabtree Div. of Howard Smith P. Mills.
WESTON (GEORGE) LTD., Canada
Somerville Ltd. (Packaging materials).
WEYERHAEUSER TIMBER CO.
Container plant of Dole Hawaiian Pineapple Co.
United Wood Corp., West Memphis, Ark.
WHITING PAPER CO., Holyoke, Mass.
Merger with N. E. Ind.

MILLS STILL MERGING
Philip Carey Mfg. Co., Cincinnati, Ohio, has purchased the Liberty Bell Mfg. Co., Swainsboro, Ga.
Federal Paper Board Co., Inc., has picked up the Manchester Board and Paper Co., Inc., Richmond, Va.

Governor's Safety Trophies Given in Pacific Coast States

WASHINGTON—Dr. E. Lovell (left) Rayonier Olympic Div. research mgr., receives award from Gov. Rosellini.

OREGON—State Treas. Belton (left) presents award to Res. Mgr. W. O. Beaton for Crown Z Lebanon Div.

CALIFORNIA—Kimberly-Clark Fullerton Mill Mgr. T. H. Howe (left) and Mill Supt. Marv Gade with award.

Coast Mills Set Safety Records

. . . and strive for new approaches and further injury reduction

Big accomplishments in safety have been made by Pacific Coast mills, the result of constructive programs cooperatively developed and carried out by labor and management working together. At the core are three organizations—United Papermakers & Paperworkers (UP&P), International Brotherhood of Pulp, Sulphite and Paper Mill Workers (IBPS&PMW) and Pacific Coast Assn. of Pulp & Paper Manufacturers.

On top of remarkably low injury frequency rates among member mills, the participant groups are actively striving to develop even better safety programs. They recently completed their 14th series of annual two-day labor-management safety conferences—one each in Calif., Wash. and Oregon.

Electrical hazards—both industrial and household—were emphasized at all three conferences. Injury case studies were constructively and effectively featured, too.

This type of "safety message" had been successful enough on previous presentations to warrant further development. At the recent state conferences the injury case studies included carefully prepared photograph slides of in-plant conditions and situations in which injuries actually occurred.

After familiarizing conference delegates with conditions pertaining to the accident, they were called on to contribute suggestions as to how it could or should have been prevented, and then shown slides illustrating how the situation actually was corrected.

Such case studies provide opportunity to acquaint a broad segment of plant personnel with hazard problems and factors involved in eliminating them. Additional advantages accrue to the local safety program, creating interest and experience, from the efforts involving reconstruction of the accident and visually recording causative and correctional factors.

Winners of West Coast Mills Safety Awards

Lowest Cumulative 5 Yr. Frequency (of all member mills)
Crown Zellerbach Corp., Port Townsend

Lowest Cumulative 5 Yr. Frequency in Oregon
Coos Bay Pulp Co., Empire

Lowest Cumulative 5 Yr. Frequency in California
Longview Fibre Co., Los Angeles

Otto R. Hartwig Safety Award (lowest frequency for 1959)
Kimberly-Clark Corp., Fullerton, Cal.

Governor's Safety Trophies (lowest frequency for 1959 by states)
Rayonier Inc., Olympic Div., Shelton, Wash.
Crown Zellerbach Corp., Lebanon, Ore.
Kimberly-Clark Corp., Fullerton, Cal.

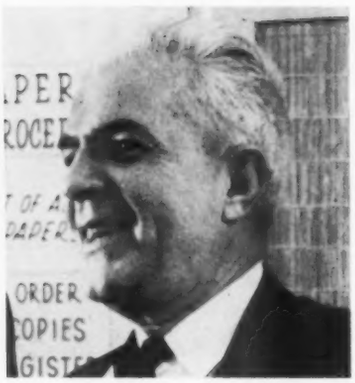
Zero Frequency Award
Rayonier Olympic Div., Shelton, Wash.
Crown Zellerbach Corp., Lebanon, Ore.
Kimberly-Clark Corp., Fullerton, Cal.
Coos Bay Pulp Corp., Empire, Ore.
Container Corp. of Am., Tacoma, Wn.
Simpson Lee Paper Co., Los Angeles

20 "Safest" Mills on Pacific Coast in 1959

1959 Award No.	Company	Man-Hours Exposure	Disabling Injuries	Frequency Rate
1.	Kimberly-Clark Corp. Fullerton, Calif.	622,334	0	0
2.	Crown Zellerbach Corp. Lebanon, Ore.	333,491	0	0
3.	Rayonier Inc. Olympic Div., Shelton, Wash.	282,300	0	0
4.	Coos Bay Pulp Corp. Empire, Ore.	233,149	0	0
5.	Container Corp. of America Tacoma, Wash.	80,296	0	0
6.	Simpson Lee Paper Co. Los Angeles, Calif.	40,063	0	0
7.	Crown Zellerbach Corp. Camas, Wash.	5,276,967	7	1.33
8.	Weyerhaeuser Co., Pulp Div. Everett, Wash.	1,188,586	2	1.68
9.	Crown Zellerbach Corp. Port Angeles, Wash.	1,258,056	3	2.38
10.	Simpson Lee Paper Co. Everett, Wash.	1,981,916	5	2.52
11.	Western Kraft Corp. Albany, Ore.	396,308	1	2.52
12.	Fibreboard Paper Products Corp. Port Angeles, Wash.	387,139	1	2.58
13.	Fibreboard Paper Products Corp. Vernon Div., Los Angeles, Calif.	1,437,949	4	2.78
14.	Crown Zellerbach Corp. St. Helens, Ore.	1,368,633	4	2.92
15.	Rayonier Inc. Port Angeles, Wash.	881,229	3	3.40
16.	Longview Fibre Co. Longview, Wash.	3,288,283	12	3.65
17.	Coos Bay Pulp Corp. Anacortes, Wash.	273,476	1	3.66
18.	Crown Zellerbach Corp. Port Townsend, Wash.	1,248,082	5	4.01
19.	Rayonier Inc. Hoquiam, Wash.	1,429,910	6	4.20
20.	Fibreboard Paper Products Corp. San Joaquin Div., Antioch, Calif.	935,578	4	4.28

"Sounder thinking, less hardware. . ." EDWARD SEAGRAVES

"Use full range of your instruments . . ." EDGAR ANDREWS



"Be ready with the answers. . ." W. F. GILLESPIE

Accent Practicality, Avoid Gadgets

. . . is theme of instrument conference. Successful operations highlighted at symposium designed by ISA for pulp, paper industry

By WILLIAM F. DIEHL, JR.
Southern Editor, PULP & PAPER

Pensacola, Fla.

● A plea for practicality among instrument men keynoted the paper industry's first instrument symposium. The request came from W. F. Gillespie, resident manager of Crown Zellerbach's Bogalusa, La., div. and onetime TAPPI president, who called for less gadgetry and more sound ideas.

He was followed immediately by Celanese Corp.'s Edward Seagraves who carried the same theme even farther by demanding less hardware and more serious thought about such things as costs and budgets. "Learn to think the way management thinks without losing sight of your engineering job," he said. Mr. Gillespie pinpointed it even more: "Find out the answers to some of the questions before management asks them."

Some Questions

What are some of these questions likely to be . . . will new ideas increase operative efficiency? Will they increase quality? Will they reduce costs and accidents? These are the things management is basically concerned about, he said. He also threw out a few words of wisdom . . . and of caution. Management would like to see more simplicity in systems; good follow ups to start-up instrumentation to make sure it is doing the right job; careful scrutiny of instrument maintenance; good check lists. A pet peeve, he said, is a dazzling instrument panel which is not working.

Don't Perfect the Perfect

Instrumentman Seagraves added some other practical thoughts: "Don't get all tied up trying to perfect something that is already perfected. The bicycle is an example. It is just about perfect, I don't look for any big breakthroughs in bikes this year. The same is true of many areas of our mills. They are okay, so leave them alone.

Study Fringe Areas

"Select a fringe area aching to be studied and exploited and go to work. Progress is difficult but rapid in these areas. And there are bonus improvements—things which are solved easily once the big problem is overcome."

Mr. Seagraves also warned against playing follow-the-leader and wasting valuable time making mistakes that have already been made by others. "If the petroleum industry has perfected a device and it is applicable to your process, use it. Don't waste time 'perfecting' it for your operation. Follow the example of the Alaskans . . . they jumped straight from the dogsled to the airplane without messing around with horse and buggies and automobiles."

The main issue seemed clear: In today's complex electronic world it is absolutely necessary to keep one foot in the administrative door; to make sure a new application is needed and will pay off.

Automatic Controls Lick Kiln Problems

The practical application of instrumentation was discussed throughout the meeting but no more interesting example was the case history presented by Richard Gardner, who is instrument supervisor of Buckeye's Foley, Fla., mill.

Troubled with erratic feeding and water problems in its new rotary kiln, Buckeye's problem was compounded

when the system was converted from oil to natural gas.

Installation of automatic flow control system using magnetic type flowmeters and special valves has resulted in annual savings of up to $30,000.

New System Benefits

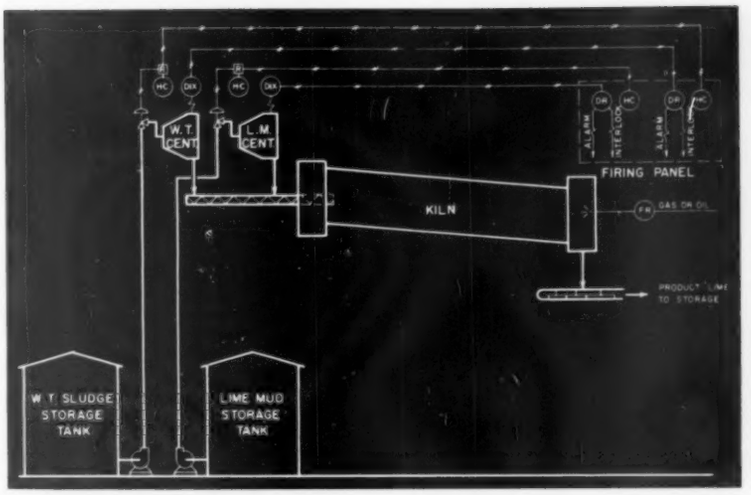
This new system shows the following specific benefits: Kiln capacity has been increased due to more even loading; quality of reburned lime product has improved; fuel costs decreased 15% due to more uniform operations.

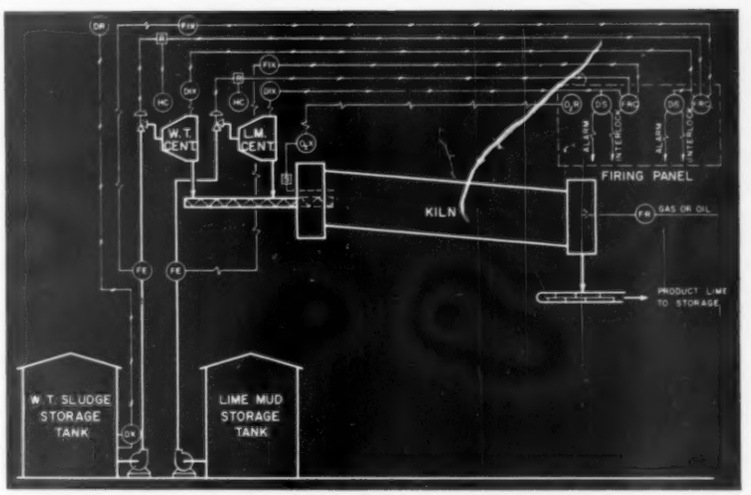
The two accompanying sketches show how this system was changed.

Above is the old manual system while the sketch below shows the automatic set-up.

Torque Recording System

The load on this machine, and the other kiln at Buckeye, is measured by torque recording system using a Baldwin Sr-4 cantilever type strain gauge load cell as a measuring element. An indicating instrument then transmits an air signal to the recorder on the firing panel. The system is calibrated in pounds thrust on the load beam with a range of zero to 600 pounds. Recorder has a contact for the high torque alarm on the annunciator panel and one on the safety shutdown interlock which stops the centrifuge in the event of overloading.





PRACTICAL APPLICATION of instrumentation which was the keynote of the paper industry's first instrument symposium, is shown in these sketches of lime kiln feed controls at Buckeye's Foley, Fla., mill. Above: old manual system. Below: automatic set-up.

An Instrument Man Evaluates Two Systems

A calm look at electronics and instruments of the future was made by Container Corp.'s Edgar Andrews, Fernandina Beach, Fla., instrument supervisor. In studying pneumatic versus electronic instruments he said:

Change Slow

"We will undoubtedly follow the example set by the petroleum industry which is highly automated and instrumentized now . . . but we will be much slower. Petroleum has been characterized . . . by new products and new processes while we are producing the same products using the same processes we were using years ago. The change will come slowly."

Judge on Individual Merit

Evaluating pneumatic and electronic instruments, he presented a comparison of the two types of instruments, but made some sage comments before making his appraisal: "Nothing is good . . . or bad . . . because it is new . . . or old. Everything must be judged on its individual merit. Remember, too, we are not yet using the full range of our pneumatic instruments now."

Pneumatic

1. Lower price.
2. No electric power needed.
3. No shock hazard.
4. Compatible with simple pressure level instruments.
5. Choice of round or strip charts.
6. Complete line of all instruments available.
7. Familiar devices and principles; easy to learn; lower intelligence level can operate.

Electronic

1. Lower installation cost and maintenance.
2. No instrument air needed.
3. No "frozen" air lines.
4. Compatible with loggers and computers.
5. High sensitivity; faster response.
6. Ratio control and offset cascading extremely easy.
7. Many trained instrument mechanics are now available; many electronic instrument schools.

Effective Maintenance Control

. . . is outlined following extensive interviews with pulp and paper mill personnel. The big need: Cooperation

By FRANK SCHWAB JR.
Paper Industry Consultant
Booz-Allen & Hamilton

● Need for more effective and realistic control of maintenance is reflected in increased maintenance costs and capital investments, in the greater use of instrumention, and in the growth of semi-automatic and fully automated factories.

Importance of good controls is dramatically illustrated. Estimated downtime costs on Fourdriniers are between $3,000 and $6,000 an hour. Over-all industry maintenance costs run from 10 to 15% of sales (based on in-industry estimates). Management cannot afford an ineffective system at these rates.

A bulwark of any good maintenance program is a work order system—a set of procedures that provides effective maintenance control. Principal functions are (1) scheduling of craft manpower and (2) cost data for individual jobs.

Investigation of four areas pertinent to work order systems will assist in making a new or revised system more effective. These are:

(1) Objectives of work order systems; (2) evidences of failures of these systems; (3) basic causes of failure, and (4) appropriate corrective measures.

Objectives

Poor scheduling will hamper effective inter-craft coordination and may result in wasted manpower and rushed jobs, ultimately causing substandard maintenance. Inadequate cost collecting procedures may result in management decision based on inaccurate and incomplete information.

To achieve optimum success, a system should realize three objectives:

1. Effective Planning—An effective work order system will allow a reduction of remedial maintenance, replacing it with planned, orderly, scheduled maintenance. In realizing this objective the firm will (a) reduce labor costs due to unscheduled work; (b) establish lower levels of replacements for spare parts, and (c) effect substantial cost savings by better utilization of the craft labor force. In a paper mill this means a reduction in the number of workers running from a break in the dry end of one machine to repair of the Fourdrinier wire on another. It means fewer emergencies and less pulling men in from digesters, chippers and barkers to paper machines, cutters and trimmers.

2. Adequate Preventive Maintenance—A good system will generate the data to allow a firm to institute preventive maintenance on an economical and workable basis. By catching the breakdown before it occurs, maintenance costs for labor and material are reduced and costly disruptions of production schedules avoided. This is particularly significant in a specialty mill continually facing changes in paper grade.

3. Accurate Budgetary Controls—A good system will secure effective control over maintenance expenditures. This will assist greatly in overall financial planning. Moreover, by providing an accurate history of both individual and grouped equipment the areas needing increased supervision and attention are determined. Facts and statistics that form the basis for effective capital expenditure decisions will become available. Finally, management will be able to identify more accurately those production foremen who are exercising good control over maintenance expenditures. Thus, management will know that a machine boss, worker or digester foreman who continually requests work on an emergency basis is not making effort to plan his maintenance.

Evidences of System Failures

When operational areas are functioning smoothly, the system is probably a success. On the other hand, if these areas reflect confusion and inadequacy, the system and the whole maintenance operation are not functioning effectively.

There are some telltale evidences of failure that should serve as storm signals in evaluating a work order system.

Priorities—When a substantial portion of maintenance work is performed on a priority or emergency work request basis, the system probably is not functioning effectively. Priority request should be infrequent and probably limited to the list opposite.

Guides to Achievement

A. Determine Corporate Role of Maintenance—An understanding of a successful system helps management determine the maintenance role within the organization. Analyzing this corporate role is vital to an effective approach.

B. Consult Maintenance Personnel—Representatives of company maintenance must be included in all phases of planning. Throughout the analysis installation and start-up all individuals in key maintenance and production positions in both the pulp and paper mill should be consulted.

C. Achieve Interdepartmental Coordination—A good system should be programmed to secure optimum coordination among all departments affected.

D. Mechanize Clerical Details (if possible)—All manual clerical operations performed in the system should be closely scrutinized with a view toward mechanization. Typical applications include inventory control, spare parts reservation, time keeping and craft scheduling. Any conversion to mechanization, of course, must be founded on a sound manual system.

E. Provide for Modification—Adequate provisions for effecting changes, modifications and alterations in the system should be made. These modifications must be effected on a continuing basis.

F. Obtain Top Management Approval—Top management should give complete backing to the principles and objectives of the new or revised system and at least two years to realize the more tangible benefits.

(1) A Fourdrinier, digester or other piece of production equipment is going out of action and is interfering with production schedules; (2) a piece of equipment will fail and interfere with production schedules if not immediately repaired or replaced; (3) a production schedule is disrupted because of failure to perform vital alterations; (4) safety of the personnel is endangered; (5) equipment is causing significant quality discrepancies.

A large number of priorities will reflect the following conditions within a pulp and/or paper mill.

(1) A substantial amount of unplanned maintenance work that leads to ineffective scheduling; (2) lack of coordination and cooperation between production and maintenance; (3) steady decrease in hours available for preventive maintenance. (This latter condition tends to militate against any truly effective preventive maintenance program.)

Unscheduled Downtime—Existence of excessive unscheduled downtime on paper and board machines indicates an inadequate utilization of craft manpower and reflects a system that is not performing the scheduling function in a satisfactory manner. Thus, necessary preventive maintenance does not get done, and the chances of unscheduled breakdown are increased.

Lag in Implementing Work Requests—Existence of many illegible work requests usually delays carrying out maintenance and greatly increases the task of the craftsman or the craft foreman.

Excessive Politicking—Active politicing between production and maintenance personnel will disrupt maintenance schedules and generate inaccurate cost data into the system.

Inadequate Engineering Estimates—When engineering estimates bear little resemblance to the reality of the work situation, the maintenance force loses the benefit of a real planning tool.

Excessive Reports—Another evidence of failure is an excessive number of work order reports containing inaccuracies, duplications, ineffective timing and poor internal distribution.

Faulty Delivery and Return of Stores Material—Existence of faulty delivery practices pertaining to stores material and an inadequate return procedure for leftover stores is another symptom of poor function. These flaws will usually reflect the existence of certain conditions within the mill:

(1) Lack of a workable, useable, readable spare parts catalogue; (2) an ineffective stores operation that may include poor space planning or limited knowledge of stock; (3) a large number of outages for such standard items as Fourdrinier wire, usually indicating no provision for parts reservation and automatic recorders; (4) inadequate coordination and cooperation between maintenance and stores personnel.

Ineffective Spare Parts Disposal Procedure—Lack of effective disposal procedure is another indication of an ineffective system. Excess material around a mill as spare parts does not offer real protection due to the obsolescence factor. Furthermore, they tie up space and are prohibitively expensive in terms of an inventory carrying charge that typically runs about 25%.

Poor Craft Morale—Poor craft morale is another sign of a weak system. It indicates that the craftsman is unable to plan and schedule his work.

Basic Causes of Failure

Inadequate Method of Installation—Installation or revision must be well organized and effectively implemented; special consideration should be accorded the following:

1. Training—Maintenance, production, accounting engineering and stores personnel must be trained in new or revised system. Effective training will help insure that the personnel within each functional area become cognizant of the need to integrate and coordinate their departmental activities with those of the system as a whole.
2. Pre-selling—Prior to installation, the company should secure acceptance of the philosophy, methods and objectives of the system.
3. Individual Application—Any successful work order system will reflect careful consideration of conditions peculiar to the particular company involved. In effect, it will be tailored to meet the needs of the individual user. Thus, in the pulp and paper industry it should reflect a larger allowance for unscheduled downtime than would be the case in the oil industry. In addition, the individual management philosophy (centralized or decentralized) of each company must be weighed in consideration of the type and number of controls employed.

Lack of Interrelationships of Functions—A succesful work order system will possess built-in provisions to assure the smooth and continuous coordination of manpower, material and equipment among principal functional areas within the mill. Thus, controls will be available to assure that the craftsman provides the right work order number to the storeroom for his material; that stores issues the right material at the right time and place; that production goes down on schedule; that engineering provides accurate and timely estimates; that the individual craft hours by separate job are recorded accurately, and that this information is transmitted to the accounting department for insertion into the regular cost accounting system. If no allowance is made for coordinating this and similar chains of interrelationships, the system will of course be a failure.

New System or Revision?

It is important that the work order system produces effective craft scheduling and accurate cost collection procedures. Failure in the former results in an ineffective maintenance operation, while ineffciency in the latter area will diminish the quality of capital expenditure decisions.

Both areas are vital for a pulp and paper company's continued success. Ineffective maintenance will hamper a company in achieving optimum utilization of present manufacturing resources, while ineffectual commitment of capital will seriously jeapordize the future. Therefore, it behooves top management to reexamine its maintenance operation to determine whether a formalized scheduling device is needed or whether the existing system is achieving optimum success.

Whether a new system or a revision is needed, particular care should be taken with regard to the manner and method of installation. It is essential that top management back the new system and provide a workable method for necessary modifications and alterations.

Broadening By-Products Production at CZ

Crown Zellerbach Corp. is increasing its line of chemicals produced from by-products, according to W. M. Hearon, gen. mgr., Chemical Products div., Camas, Wash. Tall oil and turpentine, made at Crown's Bogalusa, La. mill from pulping leftovers, have already been added and plants being constructed to produce methyl mercaptan and dimethyl sulfoxide.

The ORZAN family of organic chemicals made from sulfite pulping leftovers at the firm's Lebanon, Ore. div. and dimethyl sulfide, a kraft pulping process by-product produced at Camas, are the other CZ chemicals now being sold on a commercial basis.

Dr. Hearon says all chemical products produced by the company's three chemical plants are now marketed by Camas headquarters. Tall oil, a kraft by-product marketed by Crown under the name "Bogol," is being used in the manufacture of rosin size, adhesives, resins and plasticizers, the turpentine used in making menthol, camphor, perfumes and insecticides.

Improving Liquor Oxidation

. . . is subject of 1960 Shibley Award winner. Other papers discuss low cost electric study, increasing stock retention

By LOUIS H. BLACKERBY
Western Editor

● More efficient oxidation of black liquor is in the offing. Associated with this achievement are anticipated processing improvements such as maintaining liquor at higher sulfidity levels, a reduction of lime causticising, and less corrosion in evaporators.

The development and presentation of this information has won Pacific TAPPI's 1960 Shibley Award for William B. West, associate engr. at Central Research Dept. of Crown Zellerbach Corp., Camas, Wash. This session—the 22nd Shibley Award contest—was held at Everett, Wash. and featured three industry reports by young technicians concerning original research in which they participated.

Mr. West's findings are based on a project to improve the oxidation system at Crown Canada's Elk Falls, B.C., 500 ton/day kraft mill. Tests had disclosed that oxidation achieved with the two existing towers was generally too low to be of much value for odor control purposes. These towers were packed with asbestos cement plates with diamond-shape imprints to create turbulent mass transfer in the liquor flowing across the surface. Liquor flow from the washers was equally divided, half going to the top of each tower for even distribution to flow down over the packing surfaces to be collected in sumps and pumped to storage. Air entered at the top and flowed down through the tower, then back up through a duct to atmosphere. Blow and relief gases also entered the towers via the air ducts.

Examination indicated the possibility of three causative factors limiting oxidation: Packing volume may have been too small, air volume supply inadequate, blow and relief gases may have overdiluted the air supply.

Investigation, reports Mr. West, disclosed that the system's air supply was adequate, and the vented gases passing through the towers had no discernible effect on efficiency.

Further study revealed that maximum efficiency and odor control was obtainable only by reducing production rate to 200 tons/day—40% capacity. Oxidation efficiency dropped to around 66% when producing at full capacity.

Calculations disclosed that increased tower efficiency could be achieved at the higher capacities if the towers were converted from parallel to series flow. Piping was changed accordingly. "The results," Mr. West said, "generally corroborate the theoretical advantage indicated . . . with efficiency at any given flow rate higher than for parallel flow."

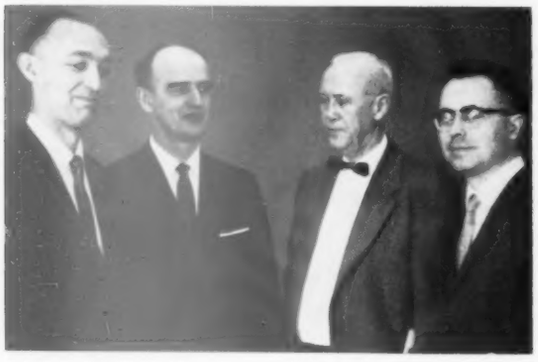
His findings indicate that "doubling the volumetric loading to the tower does not halve retention time." From the standpoint of packing efficiency, the most economic tower design would utilize as high a mass flow rate and equivalent tower height as practical.

Most industrial contracts for electric power include a clause penalizing the purchaser if the plant's power factor is below a given level. Hence the power factor assumes significance to the user because it's the means by which such penalty payments can be avoided.

To determine the power factor of a circuit, its volts, amps and watts must be ascertained. E. E. Egan, senior electrical engr., Crown Zellerbach Corp. Camas Div., presented a paper concerning a practical system for determining power factors from data from existing mill-circuit metering.

The ideal condition, he says, would be to have a voltmeter, ammeter and wattmeter at each load distribution point. However, only one or two of the three powerfactor items are readily obtained from metering normally installed. This would not be objectionable if meters could be temporarily

Participants of Pacific TAPPI's 22nd Annual Shibley Award Contest



West Boots Billington Egan

MODERATOR Paul S. Billington, Research Dept., Pulp & Paperboard Div., Weyerhaeuser Co., Longview, Wash., confers with contestants William West, Crown Zellerbach Corp. Central Research, Camas; Lloyd Boots, Simpson Paper Co., Everett; E. E. Egan, Crown Z Camas Div.

West Billington

SHIBLEY AWARD WINNER William West receives $100 check from Moderator Paul S. Billington, a past chairman of the Pacific Section. Mr. West won this year's award for his paper presented on improving black liquor oxidation.

installed, but doing this involves shut-downs. Besides, industrial systems are so large that too much time would be required to make power factor studies if meters were moved from point-to-point as shut-downs occur.

The practical solution is to obtain available information directly from the installed meters, then determine the rest of the data by indirect methods.

An accurate one-line diagram is "the most valuable tool in preparing a power factor study," stated Mr. Egan. It shows main power flow and all existing metering; is kept functionally simple and does not indicate equipment positioning.

Close examination of meter types and locations on this accurate chart will determine specific areas for which indirect methods will be needed. Watt-hour meters serve as valuable sources of information in his studies.

After locating all meters, make several rapid tours of the system recording meter readings at major load division points. Tabulate the average reading for each meter.

Loads and power factors for the system can be determined from these data without use of temporary metering. Mr. Egan's computation involves using formulae and vector diagrams. The latter provide a method of obtaining circuitload information not otherwise available. The vector drawn to close the diagram represents the magnitude and power factor of the unmetered load.

Formulas used for his power factor calculations include the following:

(1) $KW = \frac{\sqrt{3}\ EI \cos\theta}{1000}$ (Kilo watts)

(2) $KVA = \frac{\sqrt{3}\ EI}{1000}$ (Kilo Volt - Amps)

(3) $P.F. = \frac{KW}{KVA} = \cos\theta$

(4) $KW = \frac{3.6\ R \times K_h \times PT \times CT}{S}$

(5) $KVA = \frac{\text{Connected H.P.} \times .746 \times \text{Demand Factor}}{1000 \times \text{P.F.} \times \text{Efficiency}}$

K_h = Watt hour constant
R = Revolutions of disk
S = Time in seconds
PT = Potential transformer ratio
CT = Current transformer ratio
W = Watts
E = Line voltage
I = Line current
KVA = Kilovolt - amperes
KW = Kilowatts
H.P. = Horsepower
P.F. = Power factor

New Papermaking Aid

A progress report based on 14-month investigation of retention aids by Simpson Paper Co., Everett, was made by Lloyd O. Boots, tech. asst. of paper mill. Mixtures predicated on the electrokinetic theory that particles carrying opposite charges attract each other were tried. The product used—Nalco 600, which was developed as a coagulating aid for water treatment plants—is cationic and has an attraction for cellulose fibers (anionic). Tried by itself as a retention aid on paper machines 'it was not outstanding," reported Mr. Boots.

Better results came from adding "600" to the fiber and an anionic material to the filler. Nalco D 1593 was determined as most effective and mixing it 1:200 parts by weight with Nalco 600 was found to be the proper ratio.

In investigating the use rates of this retention aid, de-inked stock was processed in a laboratory beater. The stock included titanium, filler clay, rosin size and alum for pH control. Hand sheets were made using quantities of retention aid ranging from zero to 4 lbs./ton. Compared with hand-sheets made of the control stock (no retention aid), a 15% increase in basic weight resulted from adding 4 lbs. of Nalco 600-D1593 per ton; a 5% increase in basis weight (over control) was achieved by using glue (2 lbs/ton) as retention aid.

On-machine manufacture of 60, 80, and 100 lb. high-brightness offset was carried out to evaluate mechanical production problems. In changing over from a preceding run of 72-73 G.E. brightness without flushing the system, titanium dioxide was added to bring the total to 400 lbs./ton to obtain the desired 88-88.5 G.E. brightness. "In the transition from 72 brightness," Mr. Boots reported, "the hoped-for brightness of 88 was merely a passing phase on the way to an ultimate brightness of 90.5 felt and 90.1 wire side . . . Neither the shade or brightness varied from the beginning to the end of the run in spite of weight and machine speed changes." Ultraviolet reflectance showed little difference between the two sides of the sheet.

Mr. Boots says "Nalco 600-D1593 looks very promising as a retention aid that bonds through electronkinetic attraction. It shows an improved drainage rate on the machine, better distribution of filler, evener and better retention of color, good stable bonding of filler to fiber, but it still offers some unknown quantities." These include: Best point of addition, true shelf-life of combined material, ideal pH, effects of various amounts of rosin size, best head box temperature, and other factors.

First TAPPI Bleaching Conference Takes On Global Look; 200-300 Set to Attend

● World leaders in pulping and pulp bleaching will meet at Chicago's Edgewater Beach Hotel June 14 to 16, when TAPPI holds its first Pulp Bleaching Conference. High interest in high brightness reverts to the phenomenal rise of bleached pulps in the past 10 years.

World pulp production now stands at better than 55,000,000 tons. Bleached pulp capacity is upwards of 15,000,000 tons. Total bleached kraft capacity is about 12,000,000 tons and bleached sulfiite about 3,000,000. World bleached groundwood is estimated to be about 100,000 tons.

Throughout the Fifties pulp brightness took on added importance, especially in the United States. Bleached pulp totaled 2,887,916 tons in 1949 (including 1,454,971 tons bleached sulfite and 1,432,945 tons bleached kraft). By 1959 bleached sulfite and kraft pulps totaled 6,476,000 tons.

It was not long ago that "kraft" was synonymous with "brown" and industry thinking was that if kraft was bleached fiber strength would be destroyed. Today more than 33% of kraft pulps are bleached in the U.S.A.

Emergence of brightness in addition to fiber species as a basis for pulp prices places additional and major emphasis on bleaching. In North America pulp brightness is now a key factor in pricing kraft and sulfite pulps, with higher brightness pulps commanding a $5/ton premium. This move may precipitate more mills to introduce chlorine dioxide bleaching.

A noted pulp bleaching authority told this publication: "As we see it now, there will be more chlorine dioxide plants coming in the Sixties and increased expansion of existing plants. Pulp bleaching consistencies have been just about established at 12 to 16%. Higher consistencies will not do any good. Higher consistencies will save steam, but chlorine dioxide does not penetrate pulp to get the desired brightness or uniformity.

"Growth of bleaching and especially chlorine dioxide bleaching in the next 10 years will be in proportion to new mills built. All new mills that will bleach will use chlorine dioxide", he said.

Hydrogen peroxide is coming to the fore, notably for bleaching of groundwood and cold soda pulps. Hydrogen peroxide is also being used as one stage in a plus five bleach sequence at a few Southern mills.

APPA Chief Speaks on Many Things: Markets, Capacity, Recessions and Forest Resources

Howard E. Whitaker, who became president of the American Paper and Pulp Assn. in late February, has launched what are to be periodic press conferences in New York City and at his first of the series he said there are "no serious danger signs" ahead in 1961 or future years for the paper industry.

The press conference was held in the board room of the APPA a few hours after Mr. Whitaker, also chairman of The Mead Corp., had met there with APPA directors. Reporters from The Times, The Herald-Tribune, and a number of business publications attended the first meeting and welcomed announcement that Mr. Whitaker would hold such conferences with them from time to time when he is in New York from his Ohio headquarters. Major points discussed in this first conference:

1. EUROPEAN MARKETS: The APPA has made clear to the U.S. government that it fears that American-produced paper may be discriminated against in "Inner Six" and "Outer Seven" (European Economic Community and European Free Trade Assn., respectively). It hopes the government will intercede to prevent this.

2. CAPACITY: APPA is not concerned over the fact that several new paper machines have been ordered recently in U.S.A.—they are spread out regionally and by grades. Overcapacity means different things at different times. Mr. Whitaker said there is always overcapacity when demand dips into "valleys." He suggested capacity should be calculated by decades—and in the last two decades it has averaged about 90% whereas in earlier decades it was only 80%. This shows increasing stability and progress, he indicated. "I don't think you can say there is any overcapacity, though at times it is hard to fill," he said.

3. RECESSIONS: Mr. Whitaker did not "see" any recession in 1961 and he did not believe that recessions must come every four years, or after elections, although some persons seem to believe there is such a pattern. Supply is in good balance with demand, he said, with no apparent built-up inventories. "Paper is being bought for consumption, not for inventories," he said.

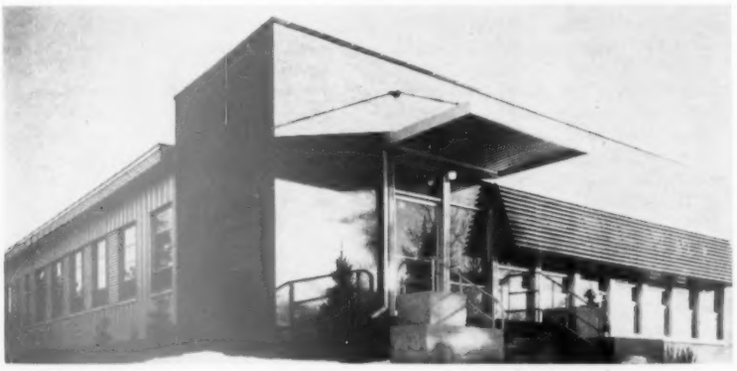
4. RECORD PRODUCTION: Production of U.S. paper and paperboard rose to a record of 8,800,000 tons in the first quarter of 1960, an 8% gain over the previous record in the corresponding period of last year. "While this is not spectacular, it is not bad either," he said. Paperboard production in the first quarter rose 6% to 4,100,000 tons, paper grades only rose 10% to 4,000,000 tons and construction paper rose 3% to 780,000 tons.

MR. WHITAKER: "We don't see any serious danger signs . . ."

5. FORECAST: Mr. Whitaker said the United States industry should do as well in the rest of the year as in the first quarter, with output reaching 35,000,000 to 36,000,000 tons, compared with last year's record of 34,051,000 tons.

6. FOREST RESOURCES: Mr. Whitaker declared that he did not agree with some pessimists who feared the U.S.A. will run out of wood for paper. "We will grow trees in the future just as they have learned to grow corn in my state of Ohio—in straight even rows of the same height and thickly planted."

Expansion Program



NEW RESEARCH CENTER recently completed and put into operation by Consolidated Water Power & Paper Company, Wisconsin Rapids, Wis. Shown is the first section of a planned four-unit structure. The 20,000 square foot building, designed to accommodate the company's expanded research program, is three miles from Wisconsin Rapids in the village of Biron.

New Golden Gate Section Of TAPPI Gets Charter

Another new section of TAPPI—the Golden Gate Section of California—was welcomed into the fold in appropriate ceremonies at a meeting in the Hotel Claremont of Berkeley, Calif., with national and local officials participating.

Charter and banner were presented to the Golden Gate TAPPI group which has been organized several years. The first TAPPI Section ever created was on the Pacific Coast, embracing Seattle and Portland areas, which has been in existence many years. The late Robert M. True, long time secretary of the northern Pacific Coast section, was one of the leaders in helping to form the California group. As an annual event the Golden Gate groups now presents a Bob True Memorial Lecture and it was given at this meeting this year by Dr. J. L. McCarthy, Univ. of Washington.

TENSIONING AVISTRAP on roll stock replacing curved edge material. Worker Uses Model AVP-2 light duty windlass type pusher bar tensioner with cutter and unlimited takeup. Right: Palletizing load of cellophane using Model AVS sealer (left) with a Model AVT -2 heavy duty windlass tensioner with cutter.

New Use of Pulp—Avistrap

Two major paper companies are testing this new wrapping cord made by American Viscose for use in packaging mill products

● Two of the largest paper companies in this industry are presently making tests which are expected to lead to the use of a new American Viscose Corp. product—"Avistrap" cord strapping—in the packaging of their products. Accompanying photos show its use in wrapping fiberboard boxes and roll stock similar to those used in paper mills.

"Avistrap" represents a new use for woodpulp. High tenacity rayon cord made from dissolving woodpulp is the principal raw material.

American Viscose Philadelphia, the nation's largest producer of cellulose base rayon, has established an industrial packaging department, announces Gerald S. Tomkins, president, to market the new product. Robert K. Scharff is its general manager of sales.

Avistrap cord strapping, which has patents pending, offers shippers economy, ease of handling, safety and strength.

Shipping Costs Reduced

"Because Avistrap cord strapping weight ¼ to ½ as much as steel strapping, of comparable strength, shipping costs are greatly reduced," points out Mr. Scharff, who adds, "and this new product gives more strap per dollar—since it costs far less than competitive materials of the same strength." Furthermore, said Mr. Scharff, the initial cost is less and the investment per package of Avistrap is considerably lower.

"Avistrap is easy to handle, too," he continued, "since coils weigh approximately 21 lbs., complete with disposable spool, in a yardage equal to a 100 lb. coil of steel strap. Avistrap coils may be changed in seconds. The empty spool may be thrown away, and the next strapping job started immediately."

Injuries Eliminated

He said injuries are virtually eliminated because there are no sharp edges or lash-backs. Avistrap, he said avoids any disposal hazard or expensive disposal procedure. It may be burned.

Damage to shipping cartons is reduced, he said, adding that Avistrap will not rust.

Avistrap may be clearly and attractively imprinted with company or product name at low cost.

Avistrap is shipped on pallets made up of easy-to-handle packages, in single-coil or four-coil cartons. A 1,000-yd spool of heavy-duty Avistrap measures 13½ in. in diameter and is only 6 in. wide. Avistrap is made at AVC's Lewistown, Pa., plant.

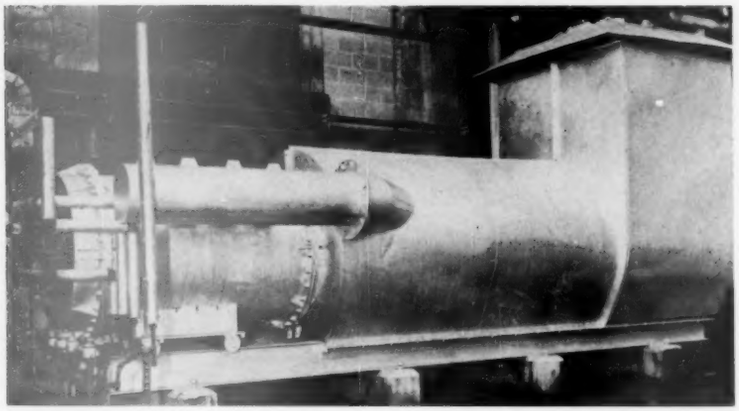
Mr. Scharff, a graduate engineer of Stevens Institute, Hoboken, N.J., joined American Viscose earlier this year. He was formerly associated with Allegheny Steel Band Co., Pittsburgh, as general manager of sales.

Thomas Brastow, manufacturing mgr. for Avistrap, joined American Viscose in 1927 as a chemist and since 1955 was appointed Technical Supervisor for tire yarns at the AVC Marcus Hook, Pa., Research Laboratories.

Palletizing Tool

CLOSEUP of the Palletizing tool, Model AVT-2, a heavy duty windlass tensioner, also marketed by Amvisco. It has cutter and unlimited takeup.

New Sulfur Burner is Compact and Simple



The recently developed Chemipulp-KC Jet Type sulfur burner (shown above) as well as the Chemipulp-KC Spray Type gas cooler are among improvements made at the Port Alice, B.C., cellulose mill of Rayonier Canada Ltd.

In design and principle this burner is compact and simple. It is about the same cost as the older type rotary burner plus combustion chamber and occupies much less space.

Molten sulfur, which is fed by a variable stroke, positive displacement pump, is atomized by compressed air and sprayed into the super plastic lined combustion chamber. The necessary air for converting the sulfur to sulfur dioxide is drawn counter-current over the combustion chamber and thus preheated, enters each side of the combustion chamber through multiple ports, each adjustable.

The spray burner is easy to operate as the sulfur is consumed immediately and an adjustment to the feed pump shows quickly in gas strength. The draft is controlled by a butterfly in the line to the gas fan and is varied to give the gas strength required by operations. 18% SO_2 can be maintained without risk of unburned sulfur going through to the gas cooler. If sulfur is drawn through to the cooler it is immediately obvious in the overflow weir of the primary cooler.

To shut down the burner it is necessary only to stop the pump. Starting up is simple even from a cold start. 12% gas can be produced right from lighting up and this can be steadily increased as the lining heats up. The rate of burning can be adjusted from one half to one and one half tons per hour with the nozzle size in use. Various nozzle sizes are available.

The unit does not require housing. Maintenance on the burner itself has been nil after a year of operation. Kimberly-Clark did the development work and owns the patents on the burner and gas cooler. Chemipulp Process, Inc., is the supplier.

Bronze Oscar-of-Industry

For the best annual report in the paper products industry, Dennison Mfg. Co., Framingham, Mass., was honored with the first award in competition sponsored by the "Financial World." Accepting the trophy at the Annual Report Awards Banquet at the Astor Hotel, New York, N.Y., was Dana C. Huntington Dennison president.

The Best-of-all-Canada award went to Abitibi Power & Paper Co., Ltd., received by W. S. Rothwell, vice Pres. and treas.

Payrolls and Benefits in K-C Exceed $100,000,000

Wages, salaries and benefits to employes of Kimberly-Clark Corp. this year topped $100 million for the first time in company history, according to Cooperation, employe magazine. Its report shows that 27.8 cents from each income dollar went to employes in wages and for such benefits as group insurance, pensions, hospital and surgical coverage, etc. Total paid out in wages, salaries and benefits was $103,243,161, an increase of over $5 million from the previous annual report.

Better than 53 cents out of every income dollar went to pay for such goods and services as pulpwood, limestone, sulfur, salt cake, chemicals; boilers, machinery parts; cartons and containers; freight costs, electric power; rentals on buildings and equipment.

In its "report to employes," the company magazine included a pocket-sized "Facts in Brief" which employes may carry in their wallet for reference when questions are asked about the company, for which they work.

Boise Cascade Gives Koppers Contracts for Equipment

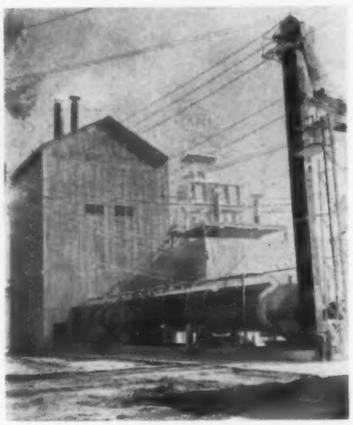
Boise Cascade Corp., Paper Division, Wallula, Wash., has ordered from the Metal Products Division of Koppers Co., Inc. a contract to furnish a Swift 87-in. corrugator, a 2-color Hooper printer-slotter, and a folder-gluer for use at its new shipping container plant to be erected between Denver and Golden, Colo. The corrugator already has been shipped.

Boise Cascade's new plant will be in operation in late summer of 1960. The company currently operates two Swift corrugators, a 78-inch machine at its Burley, Ida. plant and an 87-inch machine at its Wallula, Wash. plant.

Dow Opens Office in South Africa

Opening of a new sales office in Johannesburg, Union of South Africa, has been announced by Dow Chemical International Ltd. SA. Named sales supervisor was John R. Myers, formerly at the Midland, Michigan, U.S.A. headquarters as area supervisor for Europe and Africa.

Burgess Pigment Co. Expands



Burgess Pigment Co. of Sandersville, Ga., producers of hydrous and anhydrous aluminum silicate pigments and kaolin clays, announces that its latest Nichols Herreshoff Furnace is in full production. This additional facility will more than double Burgess Pigment Company's production capacity, enabling it to better serve the needs of the paper and paperboard industry.

S. R. CHRISTENSEN

Dryer Section, No. 6 Fine Papers Machine, the Northwest Paper Company, Brainerd, Minnesota

The Northwest Paper Company

Installation and successful start-up of No. 6 machine completed the current expansion and renovation program at the Northwest Paper Company's Brainerd, Minnesota, mill. This 200″ Beloit Fourdrinier machine has increased daily production of the famous Northwest Pedigreed Papers from 80 to over 200 tons a day. For further details and views, please turn the page.

details of Northwest's new No. 6 machine at Brainerd, Minnesota Designed to run in the 2000 fpm range, this 200″ Beloit machine produces Northwest's high-grade writing, printing, and converting papers. Addition of No. 6 machine has tripled production at the Brainerd mill. **(a)** Smoothing press following third suction press; **(b)** straight-through press featuring automatic suction pick-up and sheet-transfer arrangement; **(c)** Beloit pneumatic reel designed to wind 60″ parent rolls; **(d)** motor-operated Beloit streamflow valve; **(e)** Jones-Beloit benchboard controls at press position; **(f)** wet-end Beloit differential-drive units; **(g)** twin open-side Beloit calender stack.

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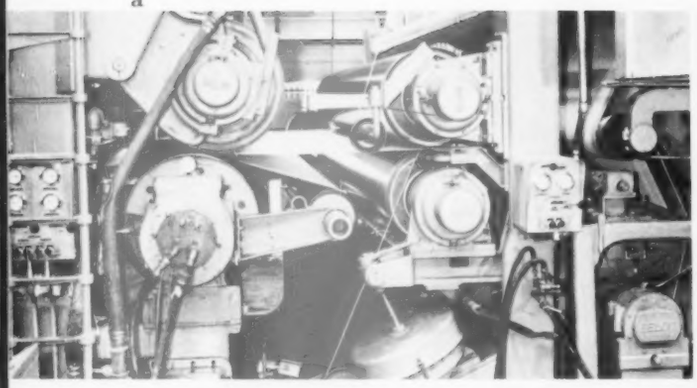

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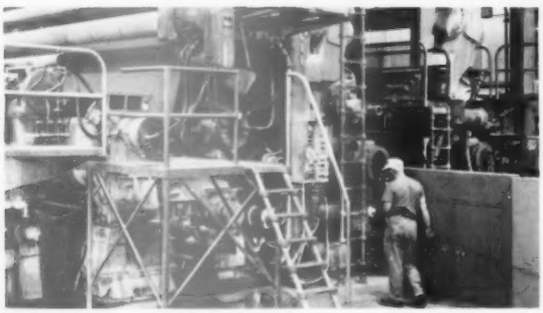

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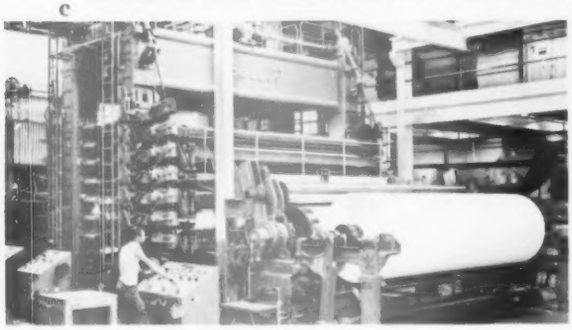

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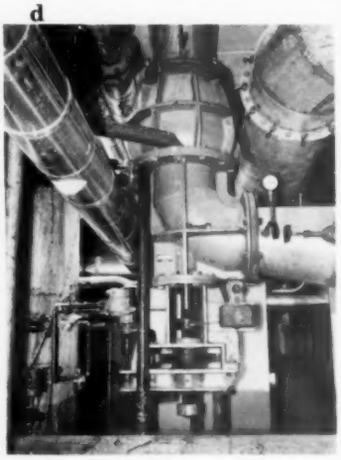

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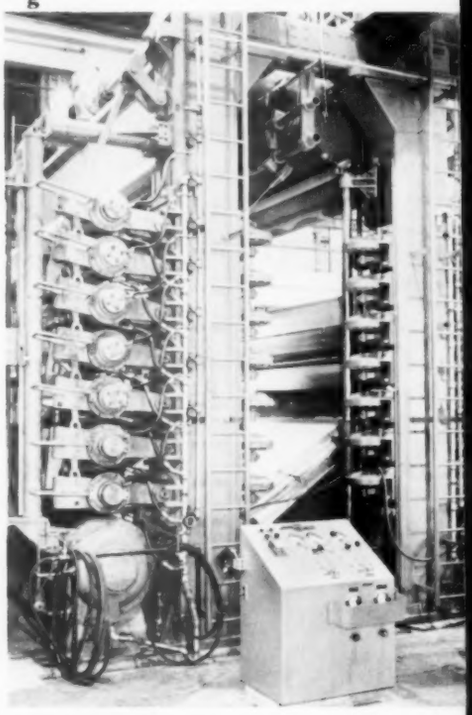

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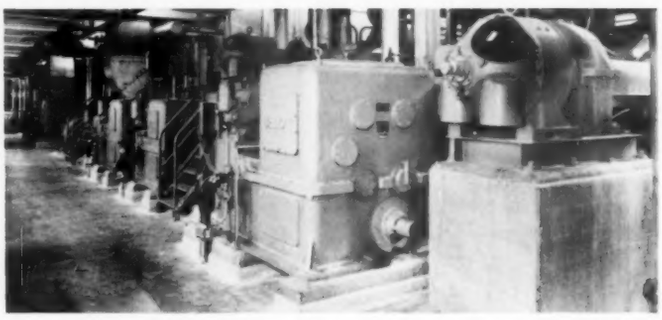


This insert lithographed on Northwest Velopaque Text.

BELOIT IRON WORKS · PAPER MACHINERY · BELOIT, WIS., U.S.A.

BELOIT

PAPER MACHINERY

your partner in papermaking

Underwraps...

Fine gift wrappings that say "we care" are made with Glidden Zopaque® Titanium Dioxide

On any occasion when gifts are given, quality wrappings made with Glidden Zopaque lend added appeal to each package.

Zopaque is ideal for formulation of finest paper products, providing maximum whiteness and brightness and a high degree of opacity. It also enhances the appearance of colored and printed stock.

Write now for complete details about the various grades of Glidden Zopaque Titanium Dioxide specially developed for beater addition and coatings.

QUALITY Glidden PRODUCTS

FINEST PIGMENTS FOR INDUSTRY

The Glidden Company
Chemicals—Pigments—Metals Division
Baltimore 26, Maryland

(This advertisement is printed on paper stock containing Glidden ZOPAQUE Titanium Dioxide.)

production increased 50%+

...by adding a section to the dryer.

The product involved is resin impregnated paper.

With the existing dryer, the material was passing through at a speed of about 50 ft./min. The owners wanted to increase production, which meant one of two things: a new line or increased output from the existing line, which, in turn, would call for higher speed. But the existing unit could not operate at a higher speed and do a satisfactory drying job.

Ross Engineers studied the problem and, instead of proposing an additional line, suggested the addition of a section at the head end of the existing dryer. It worked out perfectly. Production was speeded up, output being increased over 50% without a large capital outlay.

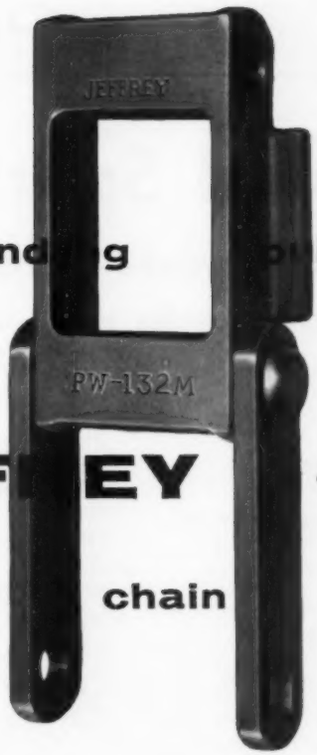
Studies of this kind are a significant part of Ross service. They enable owners to decide more intelligently whether an entirely new unit or a modernization of an existing unit should be authorized to obtain the needed increased production.

J.O. ROSS ENGINEERING

Division of Midland-Ross Corporation / 730 Third Ave., New York 17, New York

ATLANTA • BOSTON • DETROIT • LOS ANGELES • SEATTLE • MT. PROSPECT, ILL.

Designed especially for hand g lpwood...



JEFF EY Type PW

No. 132 combination chain

Provides extra metal where the wear is unusually severe—where sand and grit are extra tough on ordinary chain. Jeffrey Type PW combination chain, with its generous flat surface on the return side, lets it slide on smooth runways. No riding on idler sprockets, chief source of wear on chain internally and externally.

Although designed especially for handling pulpwood, the PW chain is equally economical on other conveyor applications for reducing wear. And by eliminating return idler sprockets, the conveyor can be made much more compact; this facilitates loading and saves on supporting structures.

Jeffrey PW chain is interchangeable with regular combination chain of corresponding size, and will operate over the same sprockets and in the same troughs. Your Jeffrey distributor can supply your needs. The Jeffrey Manufacturing Company, 1809 North Fourth Street, Columbus 16, Ohio.

CONVEYING • PROCESSING • MINING EQUIPMENT...
TRANSMISSION MACHINERY...CONTRACT MANUFACTURING

JEFFREY

Chemical Spurs Tree Growth

. . . but results are mixed. Gibberellic acid works well with hardwoods, but it is less spectacular with softwoods

By DEAN W. EINSPAHR
Silviculturist
and
J. P. VAN BUIJTENEN
Forest Geneticist
The Institute of Paper Chemistry,
Appleton, Wis.

A Special Report for Our Readers

In recent years, other countries began hearing of a sensational discovery in Japan, where a chemical, gibberellic acid, was used to stimulate plant growth.

Hoping for the same wonderful results, experiments began in America and elsewhere to speed up forest growth with this same chemical.

PULP & PAPER asked two forestry scientists to give its readers an up-to-date report on the results of these efforts. This article is their answer.

● Gibberellic acid is a growth-promoting chemical that is the metabolic product of the fungus that causes the "bakane" (foolish seedling) disease of rice. Early work with this disease was carried out in Japan and Formosa. As with rice, the outstanding characteristic of plant materials exhibiting the effects of this chemical is the stimulation of height growth.

Gibberellic acid has been tested widely on flowers and agricultural crops and the often spectacular growth responses obtained have prompted a number of studies having implications for forestry. Most trials have been conducted on seedlings and young trees with the practical aims of improving growth and early development. Results obtained from these studies range from very promising to disappointing, and are quite variable because of the number of tree species involved and testing methods and levels of chemical used.

HARDWOODS RESPOND BEST to treatment with gibberellic acid. Photograph dramatically illustrates height growth response of hardwoods under greenhouse conditions. Quaking aspen seedlings at left were treated with 500 p.p.m. gibbrellic acid, applied as spray every four weeks. Picture taken eight weeks after first treatment. (Einspahr and van Buijtenen —1960.)

Response of Hardwoods

Of the tree species treated with gibberellic acid, the hardwoods have shown the greatest growth response. Some of the earliest work with hardwoods was done on maple, oak, yellow poplar and a hybrid poplar. Recently, the influence of gibberellic acid has been checked on a number of additional species and Table I illustrates the tree species that have been treated and the height growth response obtained.

To those in the pulp and paper industry interested in the practical application of gibberellic acid it must be said that the use of this chemical in forestry hasn't advanced beyond the experimental stage. The major portion of the work that has been conducted has been of a short-term nature and under nearly ideal growing conditions in the greenhouse and nursery. The illustration shows typical height growth response by many hardwoods when grown under greenhouse conditions. Several experimental trials that have been conducted involving long-term observations under field conditions have resulted in less encouraging

height growth response. These field trials have also produced several serious plant imbalances including reduced root development and reduced total leaf area, due apparently to overstimulation of height growth.

At present, the use of gibberellic acid on hardwoods seems to have some promise, but extensive field testing needs to be carried out on a longterm basis before widespread nursery and plantation use can be recommended. Problems relating to levels and methods of application, in order to prevent overstimulation, need to be worked out. Information on the influence of gibberellic acid on root development, leaf size, field survival, and wood properties also needs to be considered.

Response of Conifers

A number of research workers have conducted studies aimed at investigating the influence of gibberellic acid on coniferous seedling growth. Treatment methods included gibberellic acid in lanolin paste, aqueous spray treatments, and the submerging of roots and/or shoots of seedlings in aqueous solutions of gibberellic acid. Height growth of coniferous species tested was much less influenced by gibberellic acid treatments than the hardwoods.

The disappointing response of coniferous seedlings, even under favorable environmental conditions, has one encouraging point in the recent work on loblolly pine (Bilan and Kemp, 1960). Treatment levels in this study were much higher than have been common in earlier work and indicate some posibility for improved seedling growth via the use of high levels of gibberellic acid. Table II briefly summarizes the approximate height growth response obtained by treatment of various conifer species.

Again it must be emphasized that, as in the case of hardwoods, the use of gibberellic acid on conifers is still in the experimental stage. Results of past trials with conifers are not encouraging and indicate the need for more information on treatment levels and techniques. This information must be obtained as an important first step in checking the influence of gibberellic acid on root development, field survival, and other important factors in conifers.

Application to Forestry Research

One of the most promising uses of gibberellic acid appears to be its use in forestry and forest tree physiology research. The influence of this chemical on dormancy and photoperiod requirements has been found to be useful in manipulating growth and flowering of experimental trees under greenhouse conditions.

Research workers have studied the interaction of gibberellic acid and indoleacetic acid on cambium activity. Studies have also been conducted regarding its influence on pollen germination, seed germination, early seedling development, and the fiber dimensions of wood produced by gibberellic acid-treated trees. Although the information gained in this research is primarily related to fundamental tree physiology, a number of practical uses for this chemical are suggested by these studies.

The status of gibberellic acid in forestry can be briefly summed up as "more research needed." Many hardwoods show response to gibberellic acid when grown in short-term experiments and under ideal growing conditions. Response of conifers has been less encouraging and a review of past work indicates that the use of

Continued on page 97

TABLE I: Growth Response Gibberellic Acid Treated Hardwood Seedlings[a]

Species	*Treatment Levels[b]*	*Duration of Trial, days*	*Height Growth Response, %[c]*
Japanese Maple	1% L.P.	30	400
Sugar Maple	1% L.P.	47	109
Willow Oak	1/8-1% L.P.	38–47	48–135
White Oak	1% L.P.	58	47
Water Oak	1% L.P.	43	51
Cherrybark Oak	1% L.P.	41	103
S. Red Oak	1% L.P.	39	161
Yellow Poplar	1/8-1% L.P.	35–90	78–200
Am. Sycamore	1% L.P.	23	353
Sweet Gum	1% L.P.	35	134
Eastern Cottonwood	1% L.P.	53	75
Poplar Hybrids	1/100-10% L.P.	30–90	40–180
Quaking Aspen	1-500 p.p.m. 1% L.P.	56	0–450
Eucalyptus Rostrata	5-200 p.p.m.	26	*ca.*200
McKee Hybrid Poplar	0-1000 p.p.m.	120	0

[a]Based primarily on studies by Marth, *et al.;* (1956) and Nelson (1957) with data from three authors not cited. Treatments made on young seedlings or similar material except in case of McKee Hybrid—treatment was on 9 year-old trees.
[b]Treatment levels—level of gibberellic acid in aqueous spray or L.P. (Lanolin Paste).
[c]Height growth response based on height growth of control trees. The growth responses obtained were not always considered by the authors to be statistically significant.

TABLE II: Growth Response of Gibberellic Acid Treated Conifer Seedlings[a]

Species	*Treatment Levels[b]*	*Duration of Trial, days*	*Height Growth Response, %[c]*
Loblolly Pine	10-400 p.p.m. spray, 1/4-1% L.P., 1-100 p.p.m solution[d]	60	0–40
Loblolly Pine	1-3% solution[d]	250	23–51
Virginia Pine	1/4-1% L.P.	175	26–68
E. White Pine	1/8-1% L.P.	42–90	0–64
Douglas-Fir	125, 250, and 500 p.p.m.	*ca.*90	0
Western Hemlock	10, 100, and 1000 p.p.m. spray	*ca.*90	0
Engelman Spruce	10, 150, and 1000 p.p.m. spray	*ca.*90	0
White Spruce	1/4-1% L.P.	165	0–22
Arizona Cypress	1% L.P.	70	–6
Pfitzer Juniper	1% L.P.	70	50

[a]Based upon the work of Marth *et al.*, (1956), Nelson (1957). Knight (1958), and Bilan and Kemp (1960).
[b]Treatment levels—levels of gibberellic acid applied as aqueous spray or lanolin paste (L.P.).
[c]Height growth response based on height growth of control trees. The growth responses obtained were not always considered by the authors to be statistically significant.
[d]Solution used by dipping seedlings.

New TD-9 Skid-Grapple earns $500.00

where logger figured to lose money!

This contract logger figured he'd lose money on a slack time job, taken to keep the crew busy. But it didn't work out that way! With his new International Drott TD-9 Skid-Grapple his daily production jumped from 10,000 bf (standard with his former equipment) to 30,000 bf. The job took only *four* days instead of *seven*—and he showed an unexpected profit of $500.00!

The TD-9 Skid-Grapple, he states, made all the difference—loading the trucks better, faster, and more safely. Yarding time was cut to the minimum because the logs could be loaded almost where the trees were felled!

A big load every pass—You simply slide the Skid-Grapple's lower prongs under the wood. Then, clamp onto the logs securely with the exclusive top grab-arm. No more one-log-at-a-time "juggling" with "end tongs" or "grabs." No more damage from "A"-frame rigs banging up trucks or injuring workers.

You have the hydraulic power, the "reach," and safe, positive load-control to pile high onto trucks. Separate top grab-arm control lets you spot-place each grapple-full with ease. You can load saw logs without scarring to devalue them. And you can load tree-lengths of slash or long leaf pine for pulpwood, *fast!*

See what a big profit difference a "load-anywhere" International Drott Skid-Grapple can offer you—giving "production-line" efficiency and minimum-crew economy. Compare *plus* values like performance-protecting, *exclusive* shock-swallowing Hydro-Spring. Let your International Drott Distributor demonstrate!

It yards 'em and loads 'em too—as this picture proves. This winch-equipped TD-9 Skid-Grapple is the one that turned an expected loss into a $500 profit. Note how this outfit increases production, doubling as a skid tractor.

INTERNATIONAL® DROTT®

International Harvester Co., Chicago 1, Illinois

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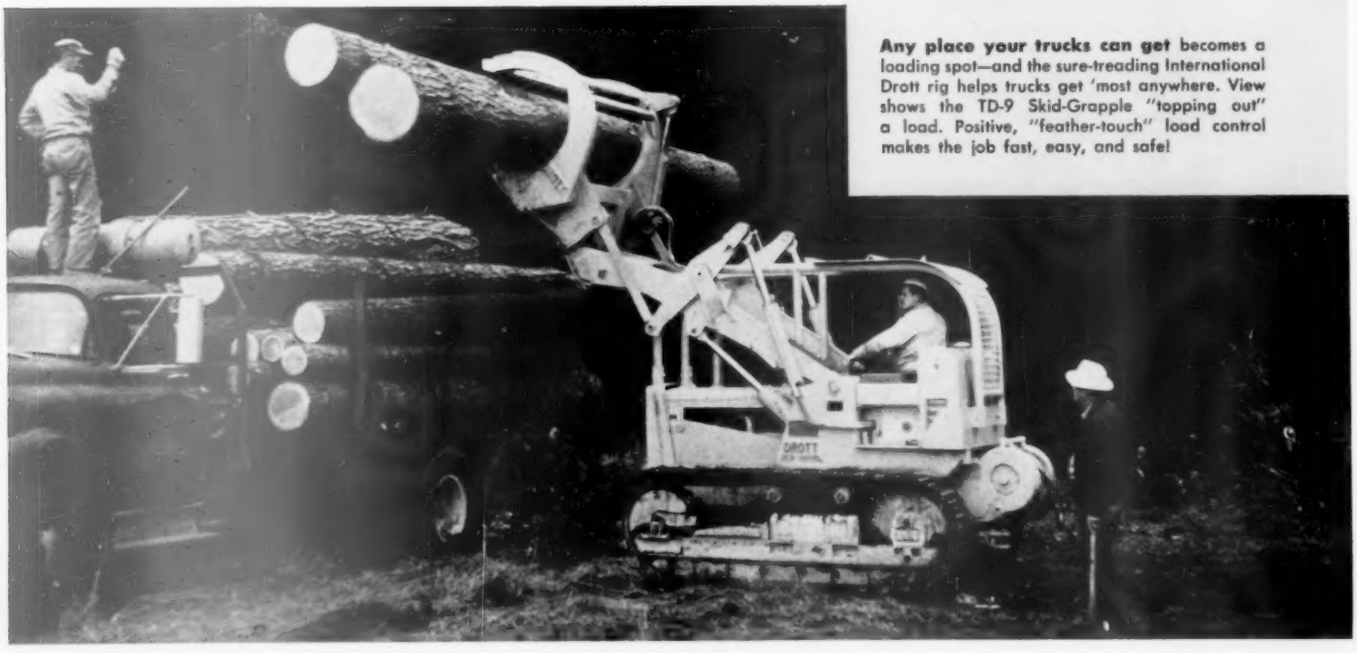
TREE FARM

KEEP AMERICA GREEN



Any place your trucks can get becomes a loading spot—and the sure-treading International Drott rig helps trucks get 'most anywhere. View shows the TD-9 Skid-Grapple "topping out" a load. Positive, "feather-touch" load control makes the job fast, easy, and safe!

gibberellic acid, on both hardwood and conifers, needs to be investigated further in the nursery and field plantings before widespread use can be recommended.

The bright spot in the gibberellic acid picture is in tree physiology research. In this field, a valuable new tool has been added for use in manipulating tree growth under experimental conditions.

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World Foresters To Attend Meeting In Seattle In The Late Summer

Late this summer the United States Government will serve as host to the "greatest array of world forestry and forest industry talent ever assembled." The occasion is the Fifth World Forestry Congress meeting at University of Wash. campus Aug. 29-Sept. 10 in Seattle, Wash.

Some 2,000 foresters from some 50 countries are expected to attend this international gathering, the first World Forestry Congress ever held in the Western Hemisphere.

The program will give emphasis to multiple use of forest lands—including production and utilization of wood and wood products, forage, water conservation, recreation—and a review of progress in world forestry. Papers are to be presented by invitation in ten specific major technical catagories. Besides, special papers may be submitted. Some 200 technical papers are to be included in the program.

President Dwight D. Eisenhower is patron of this worldwide congress.

The organizing committee is headed by Dr. Richard E. McArdle, chief-U.S. Forest Service. Industry men serving as members of the committee are George B. Amidon, Minnesota & Ontario Paper Co., Paul M. Dunn, St. Regis Paper Co., W. S. Bromley, American Pulpwood Assn., Edwin F. Heacox, Weyerhaeuser Co., Joseph E. McCaffrey, International Paper Co., David T. Mason, Mason, Bruce & Girard, Corydon Wagner, St. Regis Paper Co., Edward P. Stamm, Crown Zellerbach Corp.

Tours ranging from five to 12 days duration before or after the congress will include New York state and New England, West Coast, Minnesota-Michigan-Wisconsin, Southern states region, Rocky Mountains, Southwest, and Alaska.

Machinery, equipment and educational exhibits are to be presented in conjunction with the two-week meeting.

Although the congress is an official function, the Food & Agriculture Organization of United Nations and other agencies cooperating in its preparation, no invitation is needed to attend. Participation, on application, will be open to anyone interested in forestry, conservation, forest recreation and forest industries. Some 80 governments within the United Nations family have been invited.

Applications should be addressed to I. T. Haig, Executive Secretary of Fifth World Forestry Congress, c/o Office of International Conferences, Department of State, Washington, 25, D.C., U.S.A.

SPA Spotlights "Soaring Sixties"

The spotlight was on the "soaring 60's" and new marketing opportunities as the Southern Pine Association held its 45th Annual Convention recently in New Orleans. Emphasis was on research and development.

E. C. Gates, Fordyce, Ark., retiring president of the association, said: "As an industry we are in a struggle for economic survival in the marketplace. It is obvious to everyone in the business of producing Southern pine that the job is too big for any one of us, regardless of the size or the circumstances of our respective companies. The nature of our industry imposes what almost amounts to an obligation to work together."

H. S. Mersereau, Crossett, Ark., vice president in charge of SPA trade promotion, said the Southern pine industry faced the "possibility of an over-abundance of product and a corresponding decrease in markets" if lumber manufacturers do not "observe the signposts and raise their merchandising sights."

Mr. Mersereau cited U.S. Forest Service reports that there is 22% more growth in Southern pine sawtimber than drain. "That 22% is likely to increase as good forest management continues to expand. To maintain stability, we must extend the area of acceptance of quality lumber."

The Southern pine industry committee, an organization that speaks for the entire Southern pine producing region on matters of national legislation, adopted a resolution which while favoring the highest wages consistent with productivity and a high standard of living for workers, opposes the principle of wage regulation through legislation on the grounds that it is economically unsound and inconsistent with the American system of private enterprise.

The body of the resolution contains an endorsement of the principle of high wages and opposition to the Wage and Hour law as a means of achieving them.

Philip E. Frankfort, Franklin, Va. was elected president of the Southern Pine Association for the next year. E. C. Gates, Fordyce, Ark., was elected chairman of the board. Other officers: A. T. Hunt, Ruston, Louisiana, first vice president; W. Scott Shepherd, Lumberton, N. C., second vice president; H. S. Mesereau, Crossett, Ark., vice president for trade promotion; M. L. Fleishel, Jacksonville, Fla., treasurer; S. P. Deas, executive vice-president.

Directors at large: Leon Clancy, Century, Fla.; M. L. Fleishel, Jacksonville, Fla.; L. R. Foreman, Elizabeth City, N.C.; Q. T. Hardtner, Jr., Urania, La.; E. L. Kurth, Sr., Keltys, Tex.; E. Oswald Lightsey, Miley, S.C; H. L. Manley, Savannah, Ga.; Arthur Temple, Jr., Diboll, Tex.

APPA Plaque for Madison Laboratory

A plaque recognizing the U.S. Forest Products Laboratory's development of semichemical pulping will be awarded by the American Paper and Pulp Assn. when the federal institution celebrates its golden anniversary at Madison, Wis., June 2-4.

R. E. O'Connor, APPA executive secretary-treasurer, said the plaque will give industry-wide recognition to the federal laboratory's neutral sulfite semichemical process and its later variant, the cold soda process. Both processes have been instrumental in bringing hardwoods much more prominently into use for paper and container-board manufacture.

APPA president, Howard E. Whitaker, will deliver a major address at a general session as one of four industry representatives. Also on this program will be F. K. Weyerhaeuser, board chairman of the Weyerhaeuser Co.

The laboratory was dedicated here June 4, 1910, in a building erected by the University of Wisconsin for the pioneer institution. The move consolidated several wood research projects maintained by the Forest Service, U.S. Department of Agriculture, at several universities. Then unique, the laboratory has been copied.

From its beginnings, the laboratory has pursued a strong pulp and paper research program. That program in the main, according to G. H. Chidester, division chief, has been aimed at furthering broad Forest Service objectives, such as the more efficient use of available timber. Toward this aim, the laboratory early began research to make hardwoods more acceptable as pulpwoods. Semichemical pulping was a major outgrowth of this research.

An Allis Chalmers 45 Motor Grader at Work

The value of adequate haul roads becomes more significant as earthmoving machinery is improved in speed and capacity. The service department of Allis-Chalmers construction machinery division points out that whether you're moving dirt for a logging road, skidding and hauling logs, moving rock from a quarry, or handling a sanitary land-fill operation, a good haul road is a plus factor in efficient production.

Haul roads for trucks and trailers must be well-maintained because of the high-speed at which these units usually operate.

Generally, haul roads can be improved by grading, filling, and in some instances, by wetting-down to reduce dust. Five important advantages of good haul roads: (1) Reduced maintenance cost of equipment, (2) Reduced fuel consumption, (3) Reduced operator fatigue, (4) Improved safety, (5) Increased production.

Timber Sales-Harvest Reaches New High

Both the sale and harvest of timber on Oregon-Washington lands of U.S. Forest Service's Region 6 reached the allowable sustained yield quota last year. This is the first time the region has achieved full quota for either sales or harvest.

"Purchasers of national forest timber in Region 6," according to Walter H. Lund, regional timber management chief, "cut a timber volume in 1959 which was 38% greater than that cut during the previous year. Receipts from this cutting were 44% higher than those in 1958. These increases resulted in a total cutting of 4,285,500,000 bd. ft. of timber products with a sale value of $85,870,500."

He attributes this increase in cut largely to (1) "the generally good condition of the wood products market during the year and (2) the large volume of timber sold in this region during 1958."

Committee Advocates New Forest Policy for Canada

The Mines, Forests, and Waters Committee of the Canadian House of Commons recently criticized the government for failure to take initiative in helping the forest industry. At the same time the committee advocated a national policy for the industry.

The report urged the government to: (1) Leave forest and mine taxation to the provinces; (2) help promote wood products marketing and provide sales credit; and (3) assist in forest research, reforestation and access road building.

1959 Forest Seed Crop Poor in the Lake States

Forest tree seed production in general was about equal to that in 1958 and was poorer than in any year since 1949 for the 14-year period of record, according to observations made at field centers of the Lake States Forest Experiment Station.

Some species produced bumper crops in northeastern Wisconsin and good crops in other localities. Seed crops of most tree species varied by localities. Compared to 1958 general seed production was better in northern Minnesota and North Dakota, about the same in northeast Wisconsin, and poorer in Michigan.

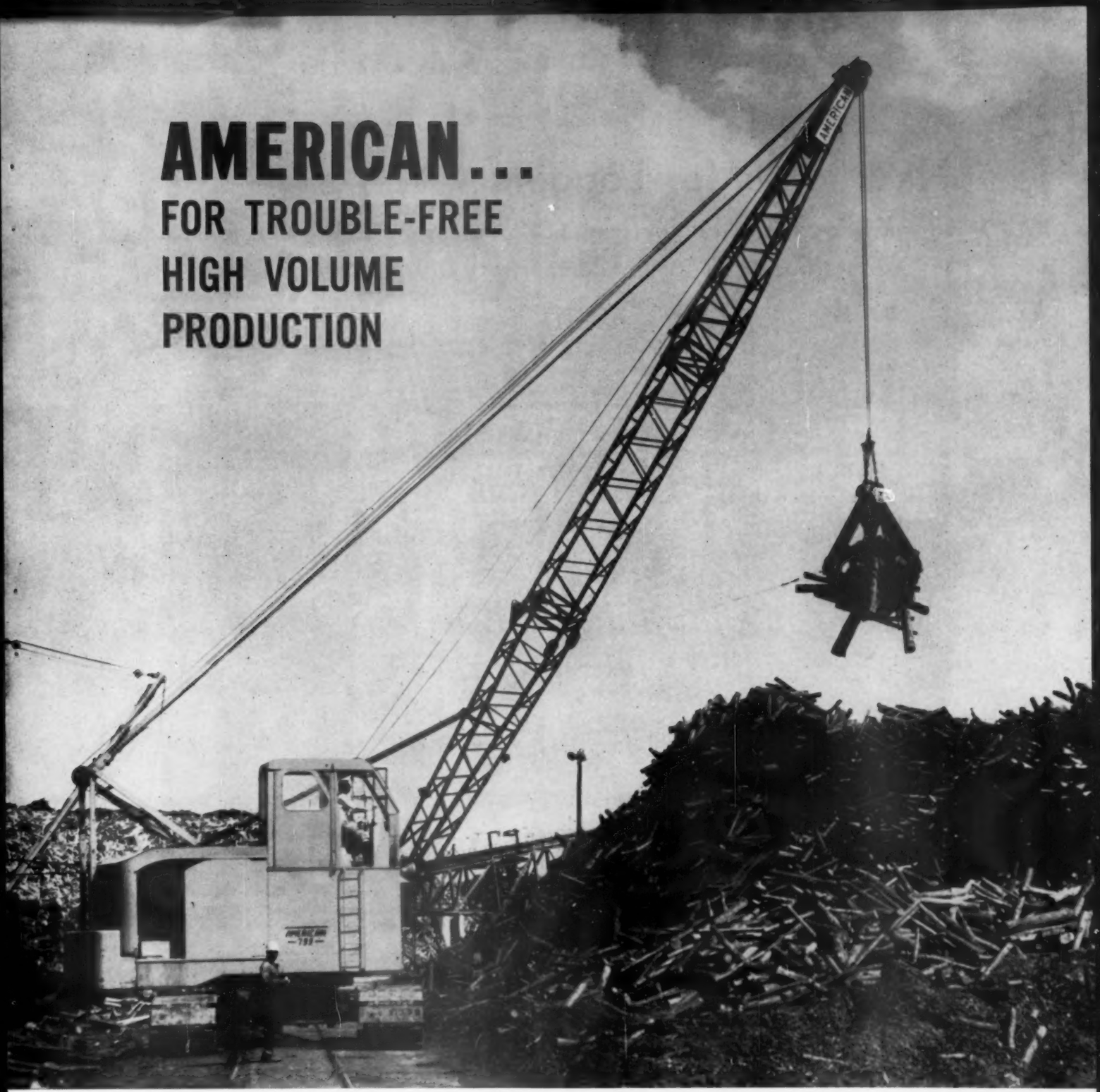
In Minnesota

In northern Minnesota good crops were reported for some localities for black spruce, northern white-cedar, tamarack, paper birch, and quaking aspen. Seed crop failures occurred in one or more localities in balsam fir, black ash and oak.

Bumper crops were produced in northeastern Wisconsin by eastern white pine, basswood, yellow birch, and white ash. Good crops were reported for black spruce, balsam fir, quaking aspen, bigtooth aspen, and American elm. Only tamarack had a crop failure.

Upper Michigan

Only red maple and yellow birch had good seed crops in central upper Michigan. The seed crop was a failure for eastern white pine, white spruce, black spruce, balsam fir, American beech, American elm, and black ash. Other species had poor to fair crops.



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New Ideas for Loggers

. . . viewed at Northeastern Logging Congress. PULP & PAPER camera takes tour through equipment demonstration area

● "Airborne forestry" is a "cinch for the future," said James J. Byrne, banquet speaker at the Northeastern Logging Congress in Utica, N.Y., April 20-21. Helicopters and possibly dirigibles will almost certainly be used to get logs out of inaccessible areas and to reduce soil damage in logging mountainsides; also for depositing lightweight fire observation towers on remote mountain peaks, said Mr. Byrne, who is chief of the USFS division of forest products utilization research, Washington, D.C.

The science of tree genetics to produce superior trees which grow faster and are more disease-resistant is already far advanced, he said. He discussed giant combine-like machines which would harvest a forest much as a field of corn is now cut (PULP & PAPER's 1957 World Review Number reported on such "Land-Clearing Machines" on page 169).

General Program Chairman for the meeting was Fred G. Simmons, specialist in logging and primary processing at USFS Northeastern Experiment Station, Upper Darby, Pa. He expressed great satisfaction in seeing advances made the last few years in logging equipment. One old-time logger interviewed by P&P made the comment that "ten years ago the type of equipment demonstrated here wasn't available."

He was specially impressed with the lightness and toughness of the power chain saws.

HARDWOOD PAYLOAD IS SKIDDED through heavy and rough terrain by Timberskidder made by Timberland Machines Ltd., Woodstock, Ont., Canada.

TALKING WITH LOGGERS about his pulpwood loader is Bill DeRosier, of Prentice Hydraulics, Prentice, Wis.

HAND-LIKE GRASP of Pettibone-Mulliken Cary-Lift enables operator to select and pick up tree-length logs with ease.

ROUGH TERRAIN was traversed by Bombardier Muskeg Carrier, made by Bombardier Snowmobile Ltd., Valcourt, Que., Canada.

NEW POWER SAWS DRAW CROWD. Left, loggers step up closer to scrutinize new features of Pioneer chain saw. Right, McCulloch saws are demonstrated by Lou Shambo of John Reiner & Co.

TRY IT YOURSELF—and he did. Frank Roberts, West Virginia Pulp and Paper Co. extension forester, properly attired in safety helmet, neatly fells tree.

AT REST are Bill DeRosier (left) of Prentice Hydraulics and Fred Borgen (right), Pettibone-Mulliken.

FEATURES of McCulloch saw are detailed to logger by Will Rusch of McCulloch Corp., Los Angeles.

TREE-LENGTH SKIDDING is handled easily by rugged Pettibone-Mulliken Speed Skidders.

"Ideal" Logging for the Future

. . . was theme of CPPA Woodlands Section's annual meeting. Chips by pipeline and fertilizers for boosted production take spotlight

● Harvesting and transporting 11,000,000 cords of pulpwood annually is the gigantic undertaking of Canada's pulp and paper industry—a project that employs some 250,000 people. What is the most efficient way to perform the job?

An answer to this question was attempted by several top woodlands operators during the recent 42nd annual meeting of the Woodlands Section, Canadian Pulp & Paper Assn. at the Queen Elizabeth Hotel, Montreal.

Papers on the subject were given by S. J. Simons, Quebec North Shore Paper Co., Baie Comeau, Que.; J. A. McNally, Canadian International Paper Co., Montreal, and W. S. Carlson, Kimberly-Clark Pulp & Paper Co., LongLac, Ont.

All agreed that mechanization of woods operations was a factor of growing importance in eastern Canada. The meeting was devoted primarily to conditions in the East—from the head of the Lakes to Newfoundland, since operations in the West, especially in British Columbia, are so different and already highly mechanized.

No agreement was reached on the ideal logging system of the future. Some favored branching and cutting close to the stump to ease handling operations. Others favored whole-tree logging, where trees are moved to a central landing to be branched and sawn to required lengths. Most of the foresters at the meeting felt that no single system would be applicable across the entire region owing to the differences in terrain, climate and forest growth. But, they all agree that use of increasingly large machines to handle larger loads offered the best means of improving efficiency.

Chips by Pipeline

Pipelines may some day be used to transport pulpwood chips from forest to the mill, according to D. R. Elliott of the Pulp and Paper Research Institute, who described the problems involved.

Pilot plant trials involving use of a 500-ft. pipeline to move the chip and water mixture have been conducted. Indications are that the method may be both practical and economical. Measurements of chip deterioration indicate that the only change appears to be a reduction in size due to splitting along the grain. Other tests indicate that pulp made from these smaller-sized chips is as good as normal commercial grades. It has also been determined that most of the chip splitting occurs in the pumping mechanism, and that in many instances this could be overcome.

Mr. Elliott said that possibility of plugging in the line caused some concern, but experience had shown that as long as the pulp was sufficiently powerful to overcome friction caused by large concentration of chips, the line would not become clogged. Calculations of the unit cost of chip pipeline transport have confirmed that it is competitive with alternative methods, including the river drive, if more than 350,000 cords per year are to be moved.

F. A. Harrison, vice pres., CIP, Montreal, acted as chairman of the sessions and was reelected chairman of the section, a technical society of some 1,200 company officials concerned with forest management and woodlands operations in Canada.

Pulp and Paper is "Fair Game"

"The myth of unlimited resources could endanger future progress in utilization of Canada's forests", declared Mr. Harrison in his annual report. "Anyone with half an ear open to private and public opinions knows there is a definite feeling that the pulp and paper industry is fair game for anyone or any group seeking a source of revenue.

"With great forests covering much of our territory, it would be shameful if through mismanagement we awoke to find that we had priced our products out of reach. It is obvious to us working in woodlands that costs—whether represented by wages, services or taxation—are all-important factors in ability to compete in the world markets.

F. A. HARRISON, re-elected president: "Costs are all-important factors in ability to compete in world markets."

Mr. Harrison referred to increasing competition from other forest countries, notably those where state control of industry and lower standards of living prevail. One means of meeting this competition, he said, "was through research, and this makes more important than ever the recently-created woodlands advisory panel of the Research Institute." He also welcomed establishment of a federal department of forestry as still another indication that Canada is moving to greater government-industry cooperation in handling national forestry problems.

Camps: Company-Owned or Jobber?

Increasing length of the forest harvesting season and use of complex logging systems and heavy equipment are largely responsible for a move to company-owned woods camps rather vesting season and use of complex according to a panel discussion led by G. E. Cross, St. Lawrence Paper Corp., Montreal.

W. J. Johnston, Anglo-Newfoundland Development Co. Ltd., Grand Falls, Nfld., pointed out, however, that his company preferred jobber

Continued on page 104

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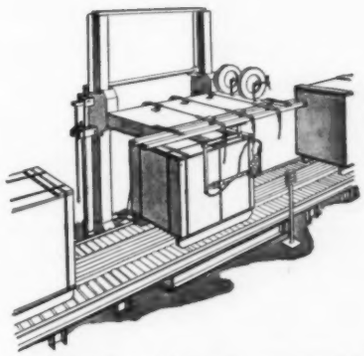

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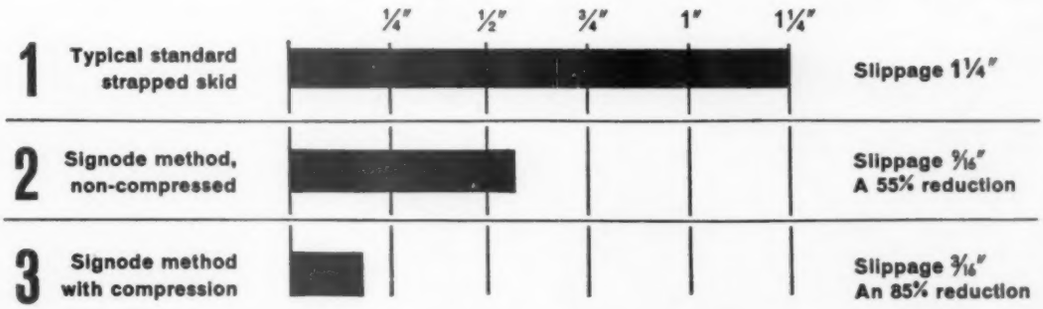

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camps in some areas, especially where operation could not be efficiently serviced from company headquarters.

Two Ontario operators, F. N. Wiley of Spruce Falls Power & Paper Co. Ltd., Kapuskasing, and R. S. Young, Great Lakes Paper Co. Ltd., Fort William, said that company camps offered the most attractive means of lengthening the logging season and stabilizing woods employment.

Soil and Increased Production

Use of forest fertilizers may be the most promising way to increase forest growth economically, H. S. D. Swan of the Institute told delegates. He said that recent experiments indicate that rate of tree growth is directly related to adequate supply of the 13 elements normally associated with plant growth. Mineral deficiencies in the soil might produce visual symptoms of retarded growth. On the other hand, minor deficiencies might result in "hidden hunger," which could only be detected by analysis.

Dr. Paul L. Aird of CIP, Grenville, Que., told how soil research aids in woodlands management. A forest can only develop within soil limitations, said Dr. Aird; hence, information on growth potentials require basic knowledge of soils.

Artificial reforestation carried out during the past 10 years by Spruce Falls Power & Paper in Ontario was described by E. Bonner, chief forester, and E. R. Sexsmith, chief forester of Kimberly-Clark Pulp & Paper Co., Ltd. They reported that more than 17,000,000 seedlings had been planted.

Southern U. S.: Picture Changing

D. M. Dyer, Bowaters Southern Paper Corp., Calhoun, Tenn. declared that the greatest single obstacle to assurance of continued and efficient delivery of pulpwood to a newsprint mill in the southern U.S. is lack of large volumes of company-owned pine forests.

The present situation in the South where most of the wood is purchased from private woodlot owners, is quite different from that in Canada, where the forest industries lease and manage tracts of Crown forests. But, Dr. Dyer said the situation in the South is changing, and Bowaters Southern is increasing its land ownership and is engaged in extensive tree planting operations.

J. S. Barrows, chief of the forest fire research div., U.S. Forest Service, Missoula, Mont., told how forest fire research has paid off in the U.S. During the past 20 years occurrence of fires has been cut in half largely as a result of improved basic knowledge about fire itself.

A specially-designed research vehicle that combines the pulling ability of a tractor with the mobility of a truck was described by W. J. Adams Jr., San Jose, Col.

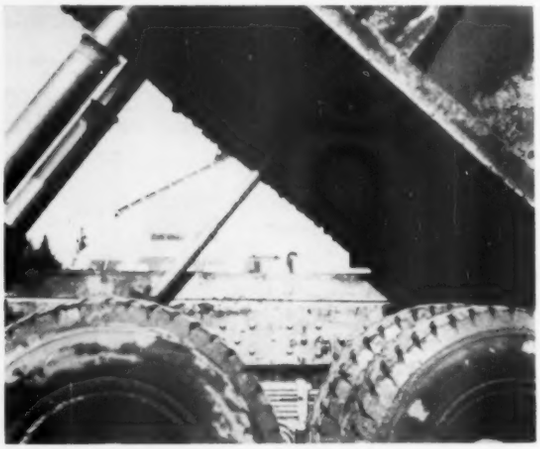
Annual Awards Presentation

The J. A. Bothwell Award for "the most meritorious work on behalf of forest conservation in Canada" was won by R. S. B. Miller, Ontario Paper Co. Ltd. The Ellwood Wilson Award for the most effective industrial application of research projects instigated or carried out by the Woodlands Section was won by W. D. Harkness, Marathon Corp. of Canada Ltd. The Price Bros. Award for the best Woodlands Section paper on a subject other than mechanization went to A. T. Catto, CIP. The mechanization award was won by R. Vit, Quebec North Shore Paper Co. The Consolidated Paper Corp. Ltd. Award for the best paper on mechanical hauling went to D. A. McPhail, CIP.

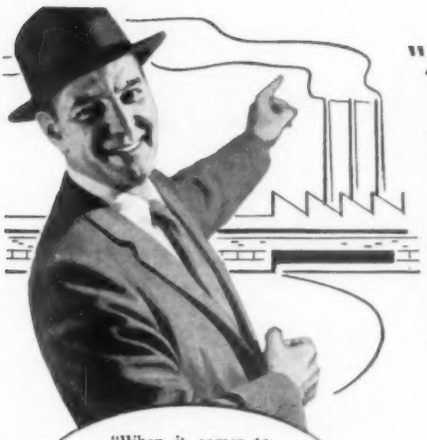
Re-elected vice chairman of the group was A. H. Burk, vice pres., woodlands, the KVP Co. Ltd., Espanola, Ont. Councillors elected for three-year terms were M. V. Cain, Price Bros. & Co.; W. F. McColm, Howard Smith Paper Mills; J. G. MacLeod, Consolidated Paper Corp. and C. R. Silversides, Abitibi Power & Paper.

HOW TO DO IT

Prevents Injuries from Falling Dump Beds



CROWN ZELLERBACH CORP., Clatsop, Ore. logging div. uses this safety stand to eliminate possibility of accidental lowering of elevated truck bed while being serviced or repaired. Cliff Hart, construction foreman who designed safety device, points out 2 in. pipe unit bolted to bracket welded to truck frame.



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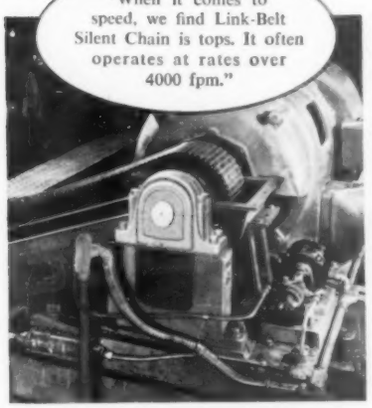

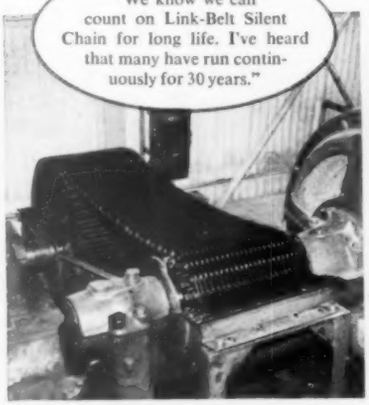

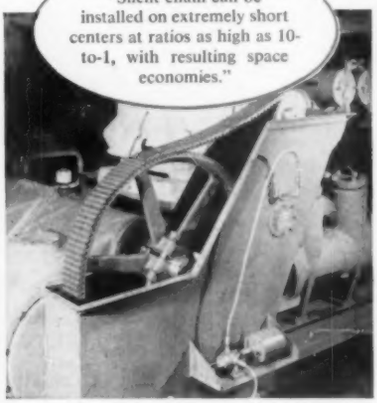

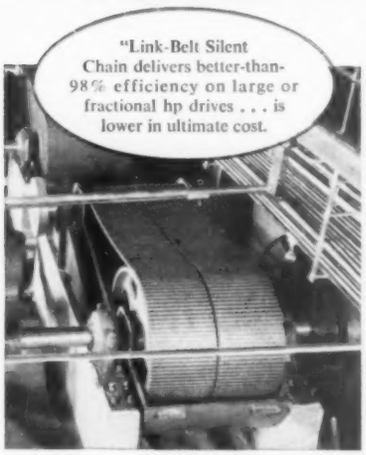

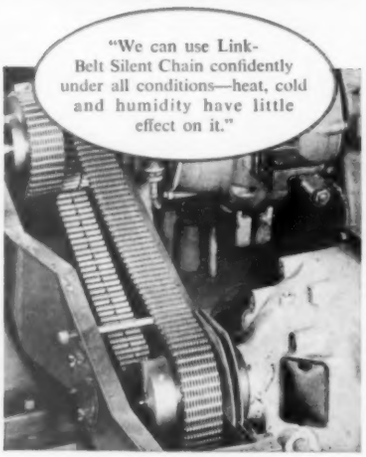

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Over 95% of all groundwood bleacheries have found that a combination of hydrogen and sodium peroxides cuts bleaching costs up to $1.25 a ton. The reason—combination formulas eliminate the use of caustic soda.

How is this possible? Because of the bleaching chemistry involved. When hydrogen peroxide is used alone, substantial quantities of caustic soda must be added to assure effective bleaching. But when sodium peroxide is part of the formula, caustic soda is formed and additional quantities aren't needed. When caustic limits of this solution are reached, hydrogen peroxide is added to complete the balance and the bleaching formula is now ready to use.

The charts below show the savings possible in a one-stage tower bleaching process when a combination of peroxides is used instead of a single hydrogen peroxide: For normal brightness, the saving runs from $.90 to $1.00 a ton; for premium brightness, $1.15 to $1.25 a ton.

You can obtain cold soda pulp and groundwood pulp brightness as high as 75 by this method. Cold soda pulp can be bleached in the refiner in absence of a bleaching tower with brightness gains up to 20 points.

For further information, get in touch with your Du Pont Representative listed at right.

EXAMPLE #1

ONE-STAGE TOWER PROCESS FOR NORMAL BRIGHTNESS

A. Using combination of peroxides

5.0% silicate
1.2% "Solozone" sodium peroxide
0.7% "Albone" 50 hydrogen peroxide

B. Using one peroxide only

5.0% silicate
1.2% NaOH
1.7% "Albone" 50 hydrogen peroxide

SAVINGS OF $.90 TO $1.00 PER TON BY USING COMBINATION OF PEROXIDES

EXAMPLE #2

ONE-STAGE TOWER PROCESS FOR PREMIUM BRIGHTNESS

A. Using combination of peroxides

5.0% silicate
1.5% "Solozone" sodium peroxide
1.25% "Albone" 50 hydrogen peroxide

B. Using one peroxide only

5.0% silicate
1.5% NaOH
2.5% "Albone" 50 hydrogen peroxide

SAVINGS OF $1.15 TO $1.25 PER TON BY USING COMBINATION OF PEROXIDES

Peroxides give you you up to $1.25 a ton!

Chemical pulp bleaching...

Peroxides—alone or in combination —give brightness up to 92 with excellent stability.

Mills throughout the country are finding that peroxides, alone or in combination, can give chemical pulp high brightness stability—without significant decrease in pulp strength or yield.

IN KRAFT BLEACHING, a five-stage process is producing outstanding results for a number of mills, among them a southern papermaker now producing over 100,000 tons of high brightness pulp annually. This process combines the best advantages of three bleaching agents—hypochlorite, chlorine dioxide and peroxide—to give brightnesses up to 90 with excellent brightness stability.

IN SULFITE BLEACHING, three peroxide processes are proving successful—a single-stage peroxide process which brightens pulp up to 75; a two-stage hypochlorite-peroxide process which brightens up to 86; a four-stage chlorine-caustic-hypochlorite-peroxide process which brightens up to 92. For information, call your Du Pont Representative listed below.

TECHNICAL SERVICE FOR YOU . . . Peroxides have a powerful bleaching action that produces high brightness pulp with excellent brightness stability. But it takes skill and experience to use peroxides efficiently. With Du Pont "Albone" hydrogen peroxide and "Solozone" sodium peroxide, you get the most authoritative advice and service available . . . from the manufacturer of *both* products.

Du Pont specialists can give you practical bleaching formulas for groundwood, cold soda, kraft and sulfite. They'll help you set up your bleaching operation, train operators, and check frequently to make sure your bleaching quality stays high and costs stay low.

Call your Du Pont representative listed below; he'll be glad to start a program to help you determine the advantages of Du Pont peroxides in your mill. Or write: Du Pont, Electrochemicals Department, Peroxygen Products Division, Wilmington 98, Delaware.

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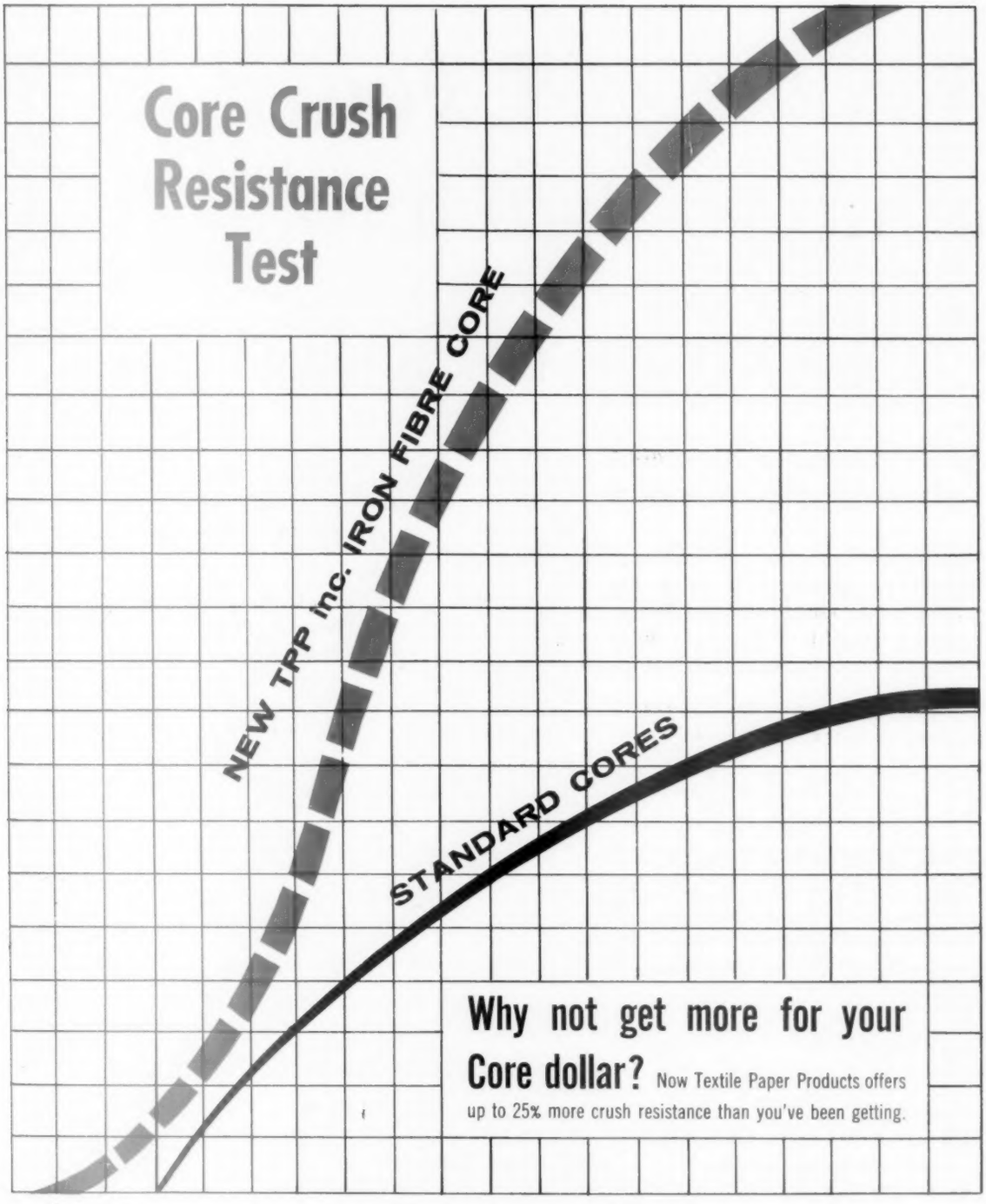
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Strictly Personal

Pacific

Puget Sound Pulp & Timber Co. reports the following executive changes: **Erik T. Ekholm,** vice pres. of operations, becomes exec. vice pres.; **Carl V. Sahlin,** timber dept. mgr., is vice pres., Timber div.; **Eric Ericsson,** mill mgr., is asst. vice pres. of operations. . . . **L. J. Forrest,** mgr. of the Northwest Timber div. of Rayonier Inc, has been elected president of the Assn. of Washington Industries. . . . **A. J. Wilson** of Los Angeles, gen. mgr. of the Wilson Paper div. of Southwest Forest Industries Inc., becomes vice pres. of the corporation.

Simpson Paper Co., a division of Simpson Lee Paper Co., promotes **Robert M. Boyle** from converting plant supt. to the new post of asst. gen. mgr.; **David F. Reid,** former beater room supt. at Lee Paper Co., Vicksburg, Mich., transfers to Everett, Wash., to succeed Mr. Boyle.

Allied Paper Corp. of Chicago appoints **Charles E. Gottesman** as mill agent for the West Coast; he formed his own fine paper mill agency last fall and is located at 4700 Crenshaw Blvd., Los Angeles. . . . **A. W. Leighton,** mgr. of utility sales since 1956, becomes mgr. of industrial sales for the Los Angeles district of the Industrial Group, Allis-Chalmers Mfg. Co.

John C. O'Brien is named mgr. of Weyerhaeuser Co.'s milk carton plant at Whittier, Cal.; he was formerly office mgr. at Carpenterville, Ill. . . . **Murray McDougal,** long prominent in the pressure-sensitive adhesive field, is president of a new California corporation, Presto Adhesive Paper Co. Inc.; vice pres. of the new firm is **James Rieger,** president of Presto Adhesive Paper Co. of Ohio; plant is located at 1245 Flower St., Glendale, in the Grand Central Industrial Center.

William E. Archer, chief development engineer, becomes mgr. of research and development for the Western Precipitation div. of Joy Mfg. Co., Los Angeles. . . . **Charles F. Peterson,** Covina, Cal., has joined the Dewey & Almy Chemical div. of W. R. Grace & Co. as mgr. of organic chemicals in the Western div.

Morton B. Hauston, associated in an executive capacity with Rayonier Inc. and predecessor firms in the Pacific Northwest during the past 30 years, retires in Seattle; in recent years he was asst. to the president and mgr. of the Northwest Timber div. . . . **Joe D. Cox,** for the last three years sales mgr. for the Growers Container div. of St. Regis Paper Co., joins Southwest Forest Industries Inc., Phoenix, Ariz., as vice pres. and mgr. of the newly formed container div.

Western-Waxide Div., Crown Z: **William Buckaloo,** quality control supv. San Leandro plant promoted to technical supervisor; **Stanley Cole,** waste control supv., San Leandro plant, to quality control supv., technical.

Edgar A. Linden Sr., 70, long-time executive of Oregon Pulp & Paper Co. who retired recently, died Apr. 4 at his Salem, Ore. home. He was former member of board of directors and mgr. of the firm's lumber div. for several years.

Ekholm Sahlin Ericsson

Advancements Announced in Puget Sound Pulp & Timber Co.

President **Lawson P. Turcotte** of Puget Sound Pulp & Timber Co. announces advancements as follows in the company's family of officers:

Erik T. Ekholm, vice president of operations was elected executive vice president;

Carl V. Sahlin, manager, Timber Department, was elevated to vice president, Timber Division;

Eric Ericsson, mill manager, promoted to assistant vice president, operations.

All of these officers have been with Puget Pulp for 25 years or longer.

Planning for PIMA Convention

Officials of PIMA and Waiting Room No. 7, International Brotherhood of Migratory Peddlers met in San Francisco last month to make final plans for the national PIMA convention in Bay City June 6-9. Left to right—**A. C. McCorry,** St. Regis Paper Co., Portland, national president of PIMA; **Gus Ostenson,** Crown Zellerbach, co-chairman housing committee; **Mrs. Hugh Bolger,** co-chairman, ladies committee; **Ed Beardsley,** Corn Products Sales Co., president, Waiting Room No. 7 IBMP, chairman of general planning; **Hugh J. Bolger,** Cameron Machine Co., chairman, general arrangements committee; **Walter Brandt,** General Aniline & Film Corp., vice president, Waiting Room No. 7 IBMP, chairman of arrangements; and **Harry E. Weston,** national secretary of PIMA.

Howard C. Hall, Res. Mgr. Crown Z, St. Helens, Ore.

He moves up from asst. res. mgr., succeeding **Raymond A. Dupuis** who was recently named res. mgr. of Crown Zellerbach's West Linn., Ore., Division. Mr. Hall received his b.s. degree in chem. enginering at Cal. Tech., joining Crown's big Camas mill as beater tester in 1947; transferred to St. Helens mill as tech. supervisor in 1955 and became supt. of converting, finishing, shipping and yard the following year.

PULP & PAPER

Strictly Personal

John M. Fulton, Crown Zellerbach Corp.'s corporate representative and director of purchases at Portland, Ore., becomes gen. mgr. of the new Northwest Lumber & Plywood div.; he continues as corporate representative but is succeeded as purchasing director by **F. T. Bowles,** formerly asst. director of purchases; **Howard Becker,** purchasing supervisor at the Camas, Wash. div., moves to the Portland office to succeed Mr. Bowles. . . . **Fred C. Shanaman,** president of Pennsalt of Washington, Tacoma, retired in late April. He is succeded by **Hugh Land,** group vice pres. who has been associated with Pennsalt Chemicals Corp. several years.

W. P. Gullander, financial vice pres. of Weyerhaeuser Co. at Tacoma, Wash., has resigned to become exec. vice pres. of General Dynamics Corp. . . . **George Hansen,** chief chemist at the Weyerhaeuser kraft mill in Everett, Wash., becomes mill technical director to succeed **John McEwen,** who is named branch mgr. at Everett. . . . **William H. Ecker,** formerly merchandising mgr., is promoted to gen. mgr. of Fibreboard Paper Products Corp.'s new Tube & Can div., to be located in San Francisco. . . . **Charles C. Harshberger,** Portland district sales mgr. for Western Gear Corp., transfers to Seattle district headquarters as sales mgr.; he is succeeded at Portland by **Fred Hearing.**

Chris H. Kreienbaum, vice pres. of Simpson Timber Co., retires following 35 years as a leader of the firm; he was instrumental in establishing long-range forest management, diversified manufacturing and the research program. . . . **James Pettigrew,** electrical engineer at Potlatch Forests Inc., Lewiston, Idaho, is named chief engineer of the firm's Pulp-Paper div. to succeed **Joseph L. Betts,** now retired and serving as senior consultant on special projects.

John M. Elder is named chief chemist at Weyerhaeuser Co.'s kraft mill in Everett, Wash.; a project chemist since the mill began operations in 1953, he joined the firm in 1952 as shift chemist at the Everett sulfite mill. . . . Service & Erection Co., Pittsburgh, Pa. designers and builders of VersaTILE linings, tanks and chests, names **E. A. Berry Co.,** Longview, Wash., as northwest representative.

Three participants of St. Regis Paper Co.'s Tacoma, Wash. operations are winners in a contest to name the new 350-ton per day machine being installed at the plant. Winners are **Wm. V. Rutherford,** traffic supv., **Robert Cooper,** machine tender, **Owen Nasr,** paper tester—each winning a $100 savings bond for suggesting "Western Star."

Sam J. Robinson, President, Publishers' Paper Co.

Mr. Robinson joined the Oregon City, Ore. firm in 1949 and subsequently became exec. vice pres. and gen. mgr. He succeeds **Norman Chandler,** who continues as a director. **Philip Chandler,** exec. vice pres. of Times-Mirror Co., Los Angeles, was elected board chairman, a new position for the paper firm. Mr. Robinson obtained a BS degree in chemical engineering at Iowa State and did graduate work at the Institute of Paper Chemistry. He was associated with Sterling Pulp & Paper Co., Eau Claire, Wis., 12 years before moving west, was with Champion Paper & Fibre Co., Canton, N.C., prior to that.

Walter A. St. Clair, asst. sales mgr., becomes sales mgr. of industrial truck sales in the United States and Canada for Hyster Co.

Executive changes for Hooker Chemical Corp., **J. G. Baldwin,** mgr. of chemical sales at Collier Carbon & Chemical Corp., Los Angeles, joins the firm as gen. mgr. of the Western Chemical div. (a new position) at Tacoma, Wash.; **Horace W. Hooker,** division sales mgr., moves to New York, N. Y. headquarters in a corporate assignment; Mr. Hooker is succeeded by **Russell O. Vognild,** asst. sales mgr. since 1946; **George A. Gentes,** Western div. production mgr., is moving to Niagara Falls, N. Y., as chief engineer; **John W. Judy,** Tacoma plant technical supt. since 1951, becomes works mgr.

Harry J. Glutting Jr., is named plastic materials sales representative for B. F. Goodrich Chemical Co. on the West Coast; a member of TAPPI, he formerly held a similar post in Boston.—Louis H. Blackerby.

California Papermakers Tour Operations at U.S. Gypsum Plant

One of the most successful plant tours ever made by the organization was held last month by Papermakers & Associates of Southern California, when about 100 papermakers visited the U.S. Gypsum Co. plant at South Gate, industrial suburb of Los Angeles. The tour was arranged by **Bill Zonner** of National Starch & Chemical Co., and the chief host was **Harry Armstrong,** works manager, U.S. Gypsum, assisted by virtually his entire plant and sales staffs. Here is one distinguished group ready to start its tour. Seated, left to right: **A. O'Nesky, M. Moore** and **C. Flynn,** all of Fibreboard; **T. Martin** and **N. Glass** of Crown Zellerbach. Standing, **Mr. Armstrong; Montel Montgomery** of Martin Hoyt & Milne, chemicals; **A. F. Lansberg** of Fibreboard; **Mr. Zonner; H. Fink** of National Starch; **L. K. Peterson** and **Harry Loesch** of Volney Felt; and **E. Pent** of Continental Can Co. Papermakers' current president is **Bill Streaker** of Fibreboard.

Northeast

J. John Verwayen is now division mgr. of Mead Corp.'s paperboard mill at North Bergen, N.J. He had been chief engineer there 13 years, is a native of the Netherlands and graduated from Middelban Technische School with a degree in marine engineering. Mr. Verwayen has a B. S. degree in mechanical engineering from Copper Union School of Engineering.

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PULP & PAPER

Strictly Personal

Donald R. MacKinnon moves up at Oxford Paper Co. from asst. to coating supt. to supervisor of color preparation at the Lawrence, Mass. mill. **William A. (Whitey) Adams** has been advanced from asst. foreman to foreman, woodroom, at Rumford, Maine. . . . **Alfred Lyon** has joined Gould Paper Co. as an engineer, succeeding **Ron Carpenter,** now with Armstrong Cork Co. as res. engr.

Ralph A. Wilkins has been elected the fifth president of Bird & Son Inc. He had been exec. vice pres. since Jan. 11 and before that vice pres. of the paper products and felt division 13 years. He joined Bird in 1923 as asst. supt. of the East Walpole paper mill. . . . **Patrick J. Doyle,** asst. pulp preparation supt., Finch, Pruyn & Co., won second prize in the Junior Award Contest sponsored by the Eastern District, Empire State Section of TAPPI. . . . **O. H. (Dutch) Messecar** has been promoted to eastern mgr., converter sales, for Fraser Paper Ltd.

Scheetz

Pierce

Brown Co. Names Pierce President, Scheetz Chairman

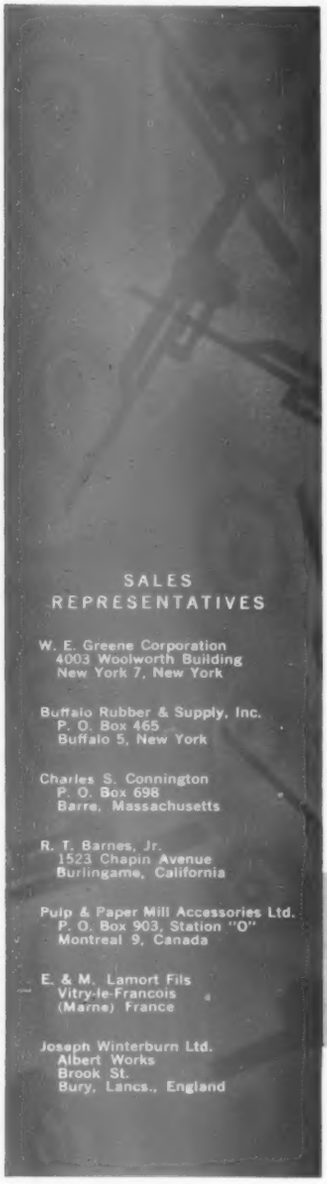
Leonard A. Pierce Jr., vice pres., operations, for Penobscot Chemical Fibre Co., Old Town, Maine, is elected president of Brown Co., Berlin, N.H. Announcement was made by **Laurence F. Whittemore,** board chairman. Mr. Whittemore subsequently asked to be relieved of his duties because of health reasons and was succeeded by **Henry F. Scheetz Jr.** Mr. Scheetz was formerly asst. to the board chairman as well as a director.

Mr. Pierce has been in the industry since 1940. He was at one time with Seaboard Paper Co. (now St. Regis Paper Co.), Bucksport, Maine, and subsequently became St. Regis manufacturing representative; asst. to the paper mill supt. and mill mgr. at Howland, Maine; mill mgr. at Kalamazoo, Mich., and asst. to the St. Regis vice pres., manufacturing. In 1956 Mr. Pierce was named asst. to the president of Penobscot and a year later became vice pres., operations. He will headquarter in Boston.

Mr. Scheetz traces his family back to the papermakers who operated the first Scheetz mill on Brandywine Creek near Philadelphia in 1760. He is one of Brown Co.'s substantial stockholders. Formerly he was a large stockholder in a group of firms merged wiht Standard Packaging Corp., where he served as vice pres.

Robert J. LaFond transfers from graphic arts research, where he was group leader, technical services, to manufacturing section and control dept., supervisor, St. Regis Paper Co. **Herbert F. Jacques,** formerly with Finch, Pruyn & Co., technical service engineer, pulping, for printing papers, reported to Mr. LaFond. **John F. Lantz,** formerly with Pfaudler-Permutit as sales estimator, joins St. Regis as technical service engineer, water and effluent.

J. Robert Bonnar, director of marketing of the Dyestuff & Chemical div., General Aniline & Film Corp., is celebrating his 25th year with the company. . . . **Henry C. Guhl** has been elected vice pres. for engineering, National Vulcanized Fibre Co. . . . **David M. Stettler** heads up the new Colton Chemical Co. sales office in New York at 150 E. 42 St.



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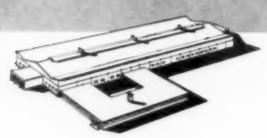

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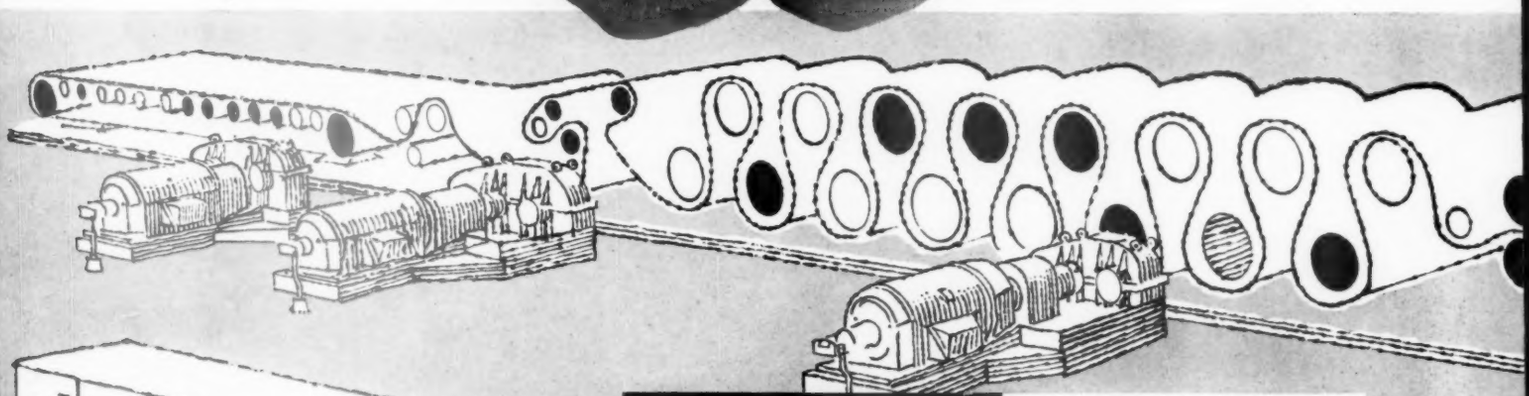

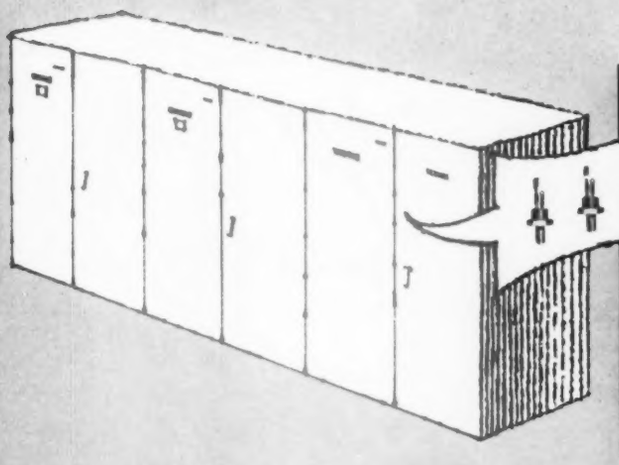

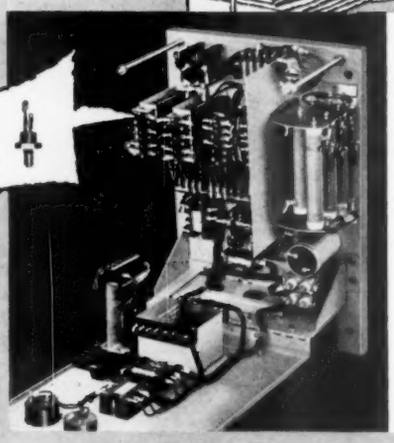

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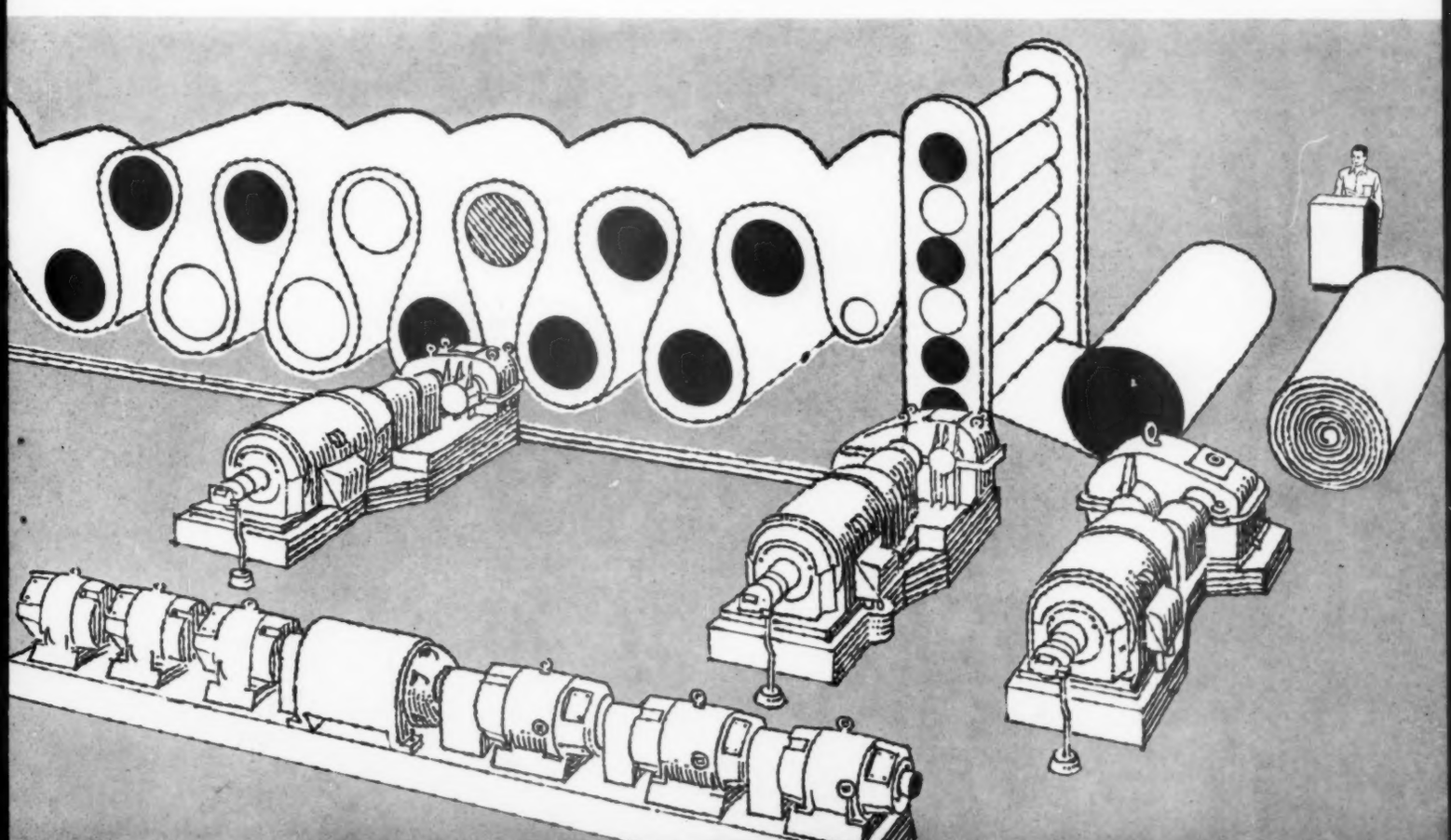


Strictly Personal

Valentine Friedrich Jr., Div. Mgr., Watervliet Paper Co.

His appointment was announced by **F. E. Bahrenburg**, mgr. of mills for Hammermill Paper Co., of which the Watervliet, Mich. firm is a division.

Mr. Friedrich was vice pres. in charge of manufacturing at Beckett Paper Co., Hamilton, Ohio (also a Hammermill subsidiary). He joined the Ohio firm 37 years ago as a chemist and later held positions as asst. supt. and gen. supt. In 1938 he became a director and secretary and in 1946 vice pres.

Jasper Mardon, internationally-known papermaking scientist, has joined Oxford Paper Co. as chief papermaking research engineer at Rumford, Maine. Mr. Mardon has been head of papermaking research since 1954 at Angelo Paper Products of Quebec. He is a graduate of Cambridge Univ. and has a graduate degree from the College of Technology, Manchester, England.

Arthur R. Albohn is asst. mgr. of Rayonier Inc.'s eastern research div. at Whippany, N.J., replacing **Dr. J. P. Hollihan. J. Harvey Wilson,** formerly technical supt. of Celanese Mexicana, has joined the technical service of Rayonier. . . . **William L. Ripley,** retired gen. mgr. of Warren Pumps Inc., died suddenly in March.—Maurice R. Castagne.

Union Bag-Camp Paper Makes Top-Level Executive Changes

Alexander Calder, board chairman and chief executive officer, is named honorary chairman of the board. **Alexander Calder Jr.,** president, becomes chief executive officer, continues as president. **Hugh D. Camp,** formerly exec. vice pres., finance, is elected board chairman. **James L. Camp Jr.,** vice chairman of the board, becomes chairman of the executive committee.

Mr. Calder's service with Union Bag covers 47 years. Elected vice pres. and a director in 1925 and president in 1931, he held the dual post of president and chairman from 1943 to 1956, at which time he became chairman and chief executive officer.

Mr. Calder Jr. joined Union Bag in 1940, was elected a director in 1948, a vice pres. in 1949, exec. vice pres. in 1952 and president in 1956.

Hugh D. Camp was serving as president and James L. Camp Jr. as chairman of Camp Mfg. Co. at the time of its merger with Union Bag & Paper Corp. in 1956.

Calder

Calder Jr.

H. D. Camp

J. L. Camp Jr.

Seaboard Air Line Promotes Forestry—at Shelby, N.C.

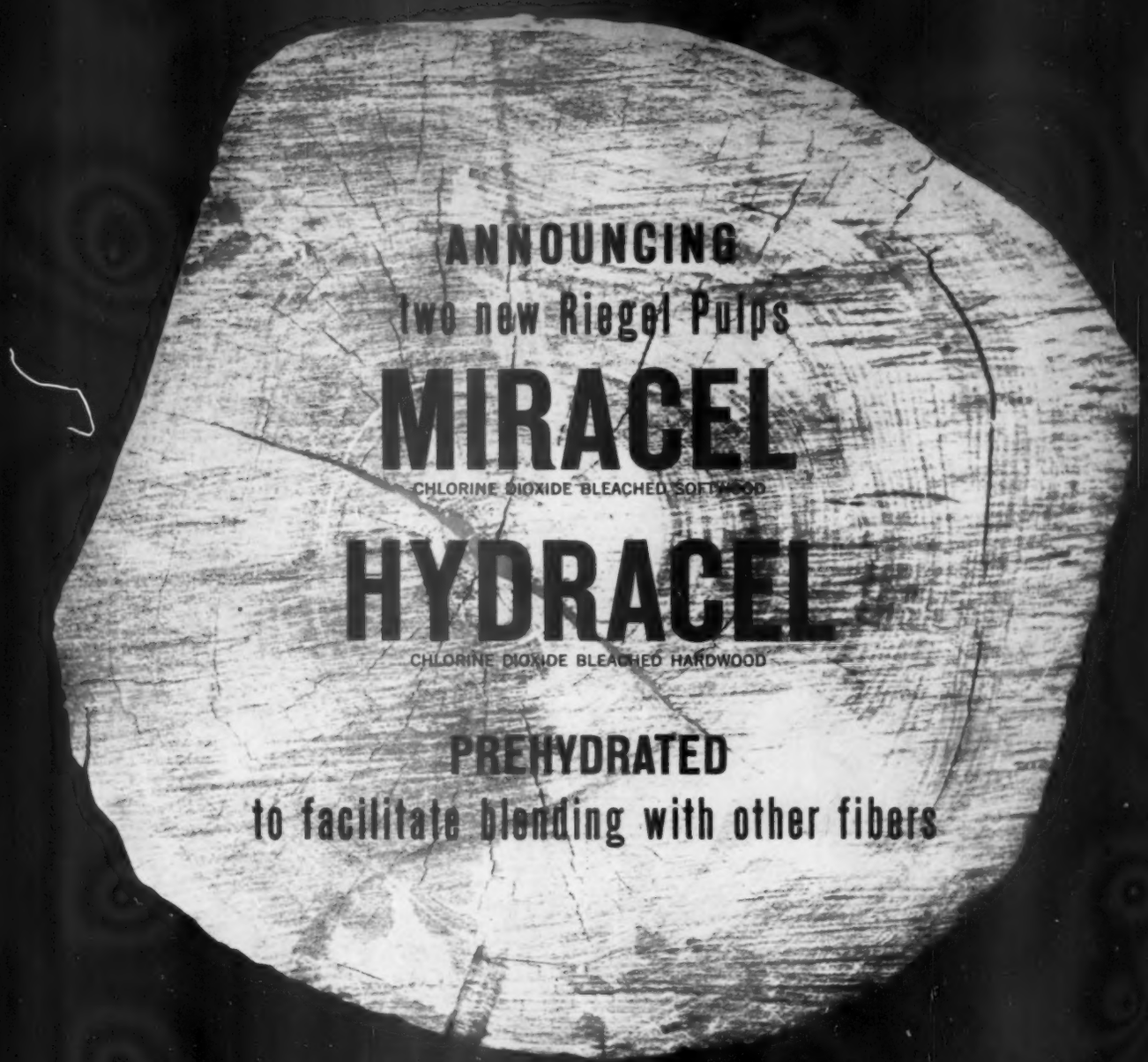
Nesbitt Balnton White Claridge Morse

A special meeting attracted more than 800 farmers to a forestry demonstration. Chief speaker was Under Secretary of Agriculture **True D. Morse,** shown in the tree planter. The planter was donated to the Mooresboro, N.C., high school by the First National Bank of Shelby to be used in forestry work by students. Others from left are **A. W. Nesbitt,** a teacher at the high school, **George Balnton,** pres. of the bank, **Warren T. White,** asst. vice president of the Seaboard railroad, and **Col. Fred Claridge,** North Carolina state forester.

Southern

Otha Winningham, formerly prod. mgr. of Bowaters Southern Paper Corp. has been named manager of Hudson Pulp & Paper's mills at Palatka, Fla. He was formerly with National Container Corp. at Jacksonville, Fla., and Valdosta, Ga. . . . **Sam Crocker, Jr.,** of Bauer Brothers southern sales division, is now residing at 15 Lakeside, Pensacola, Fla. . . . **Edward J. Calleton,** an engineering consultant with long experience in the tall oil field, has been named mgr. of Arizona Chemical Co.'s new plant at Springhill, La. It will use by-products from the International Paper Co. mill nearby.

Donald Ray Townsend has been promoted to position of market and product analyst for Gulf States Paper Co. **W. Edward Babin,** a graduate of the University of Alabama, has been named Gulf States' employment supervisor and three new engineers, **Travis Coulter,** Texas A&M graduate, **Harold Goodwin,** graduate of the University of Alabama and **Murray Norment,** also from Alabama, have joined the Gulf States staff. . . . **W. E. Saunderson** has been named shift supt. at Rayonier's Fernandina div., Fernandina.



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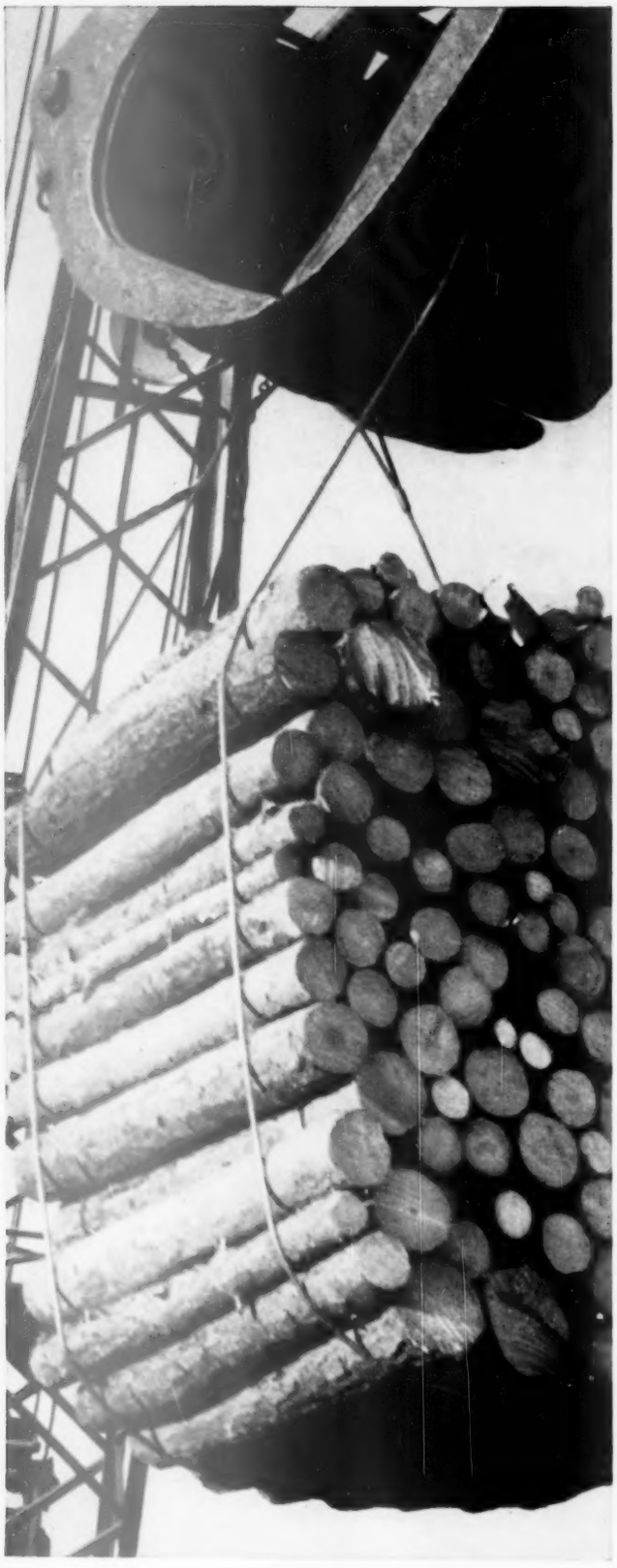

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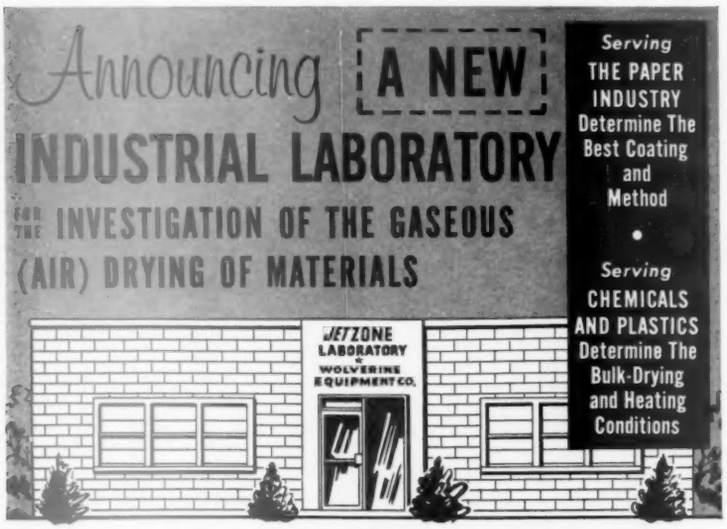
PULP & PAPER

Strictly Personal

Ann Porter, 18 year old daughter of **Donald Porter**, manager of the Coosa River Newsprint Co., Coosa Pines, Ala., died recently after a lingering illness. The Porters and their daughter formerly lived in Wisconsin where he was with Kimberly-Clark and at Terrace Bay, Ont., where Mr. Porter was first manager of that Kimberly-Clark mill. Two other sisters and the parents survive.

Alan Lincoln Burns has been promoted to administrative mgr. of the West Virginia Pulp and Paper mill at Charleston, S.C. He is a graduate of Amherst College . . . and at Covington, Va., **Dale Howard** and **Dr. John Proctor** have received new promotions: Dale Howard is now safety director and Dr. Proctor is director of training and personnel research. . . . **James T. Prince** and **Sam Steele** have been appointed technical representatives for the Oakite Products, Inc., in Tampa and Birmingham.—William F. Diehl, Jr.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Preceded by: Coater, impregnating tanks and squeeze rolls.

LINE 2 Two Zone Dryer, Heater or Cooler for Particulate Matter (pelletized material — chopped material — crystals). Works by aerating a bed of material on belt conveyor — Velocity range 1000-10,000 ft. per min. — Temperature 45°-600° — Arranged for separation of fines — 12" wide belt conveyor.

Purpose: Drying, heating, cooling of particles of material.

Preceded by: Feeder or pelletizer.

LINE 3 Super Speed High Velocity 4-Zone Arch Dryer for Coated Web Material — Carries 24" web on rolls or belt — Velocity 400-12,000 ft. per min. — Temperature 70-600°F — Proved drying capacity (clay latex) 2800 ft. per min.

Purpose: Proving coatings and coating methods.

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Yoder Tucker

In New Assignments At Gulf States

Robert L. Yoder is now res. mgr. of Gulf States Paper Corp.'s Demopolis plant, succeeding **Henry Halsell**, who returns to Tuscaloosa on special assignment for Pres. Jack Warner. **Warren Tucker** becomes operations mgr. at Tuscaloosa, replacing Mr. Yoder.

E. L. Rivenbark Becomes I.P. Pulp Mill Engineer

He has served as asst. div. power engineer since 1956, joined International Paper in 1941 as asst. plant engineer at Georgetown, S.C. He has also served in engineering capacity at Mobile and Camden, Ark., mills.

Brandon and Morden Plan to Separate

K. E. Fryfogle, president of Brandon Sales, Inc., Greenville, S.C., U.S.A., and **R. Burke Morden**, president of Morden Machines Co., Portland, Ore., join in announcing that Brandon Sales, Inc., is arranging to terminate its representation of Morden Machines Co.

Brandon Sales, Inc., is the exclusive selling agent for Brandon Dryer Felts in the entire United States and for several years has also represented Morden in the Southern territory. Brandon recently augmented its selling staff but still feels that the increase in its dryer felt business makes it mandatory that it devote its full time to Brandon Dryer Felts.

Brandon will continue to represent Morden until Morden arranges other suitable representation in the South.

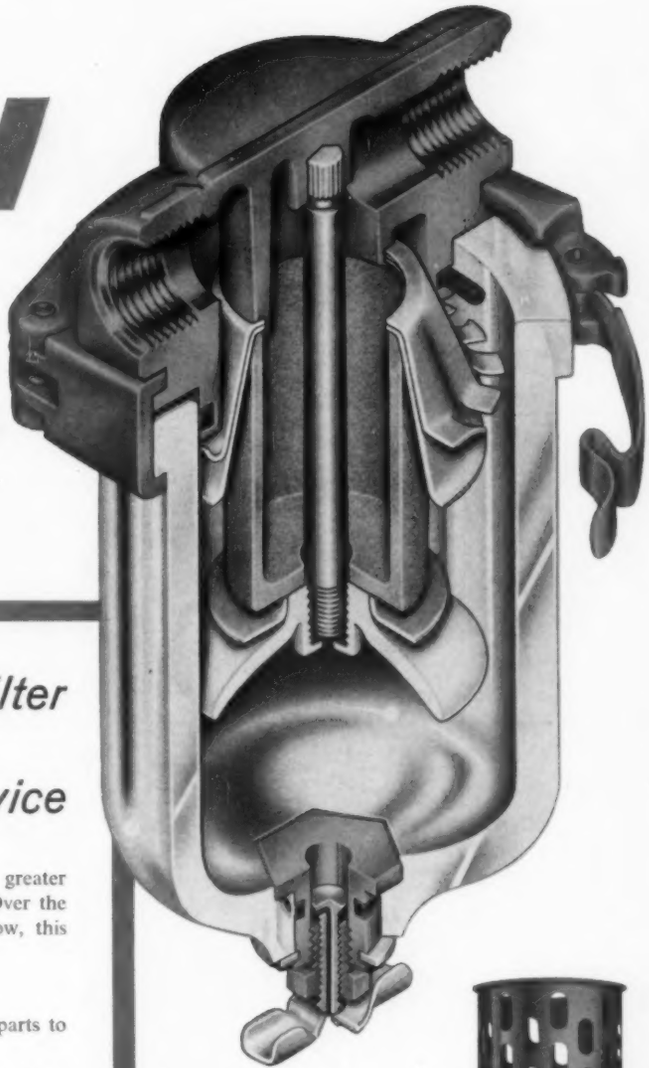
Announcing

NEW

Norgren

COMPRESSED AIR LINE FILTERS

for ¼", ⅜" and ½" pipe sizes



The most efficient filter you can buy...
the easiest to service

1 **100% liquid removal—**
Improved Norgren design provides a greater than ever liquid removal efficiency. Over the entire range of recommended air flow, this filter effectively traps all liquids.

2 **Easier and quicker to service—**
No tools needed and only 4 separate parts to handle.

3 **Larger bowl capacity for collected liquid—**
The "quiet zone" below the baffle holds 53% more collected air-line contaminants. Requires less frequent draining.

4 **New improved bowl—**
New, stronger transparent bowl has greatly improved resistance to fatigue failure.

PLUS *these important benefits:*

- **Highly effective removal of solids.**
- **Optional interchangeable filter elements—** 74, 64, 25 or 5 micron.
- **Reduced service time**—the simplest, easiest filter to disassemble and clean.

Where protection for transparent bowls is required,
a metal bowl guard, held in place by the clamp ring, is available.

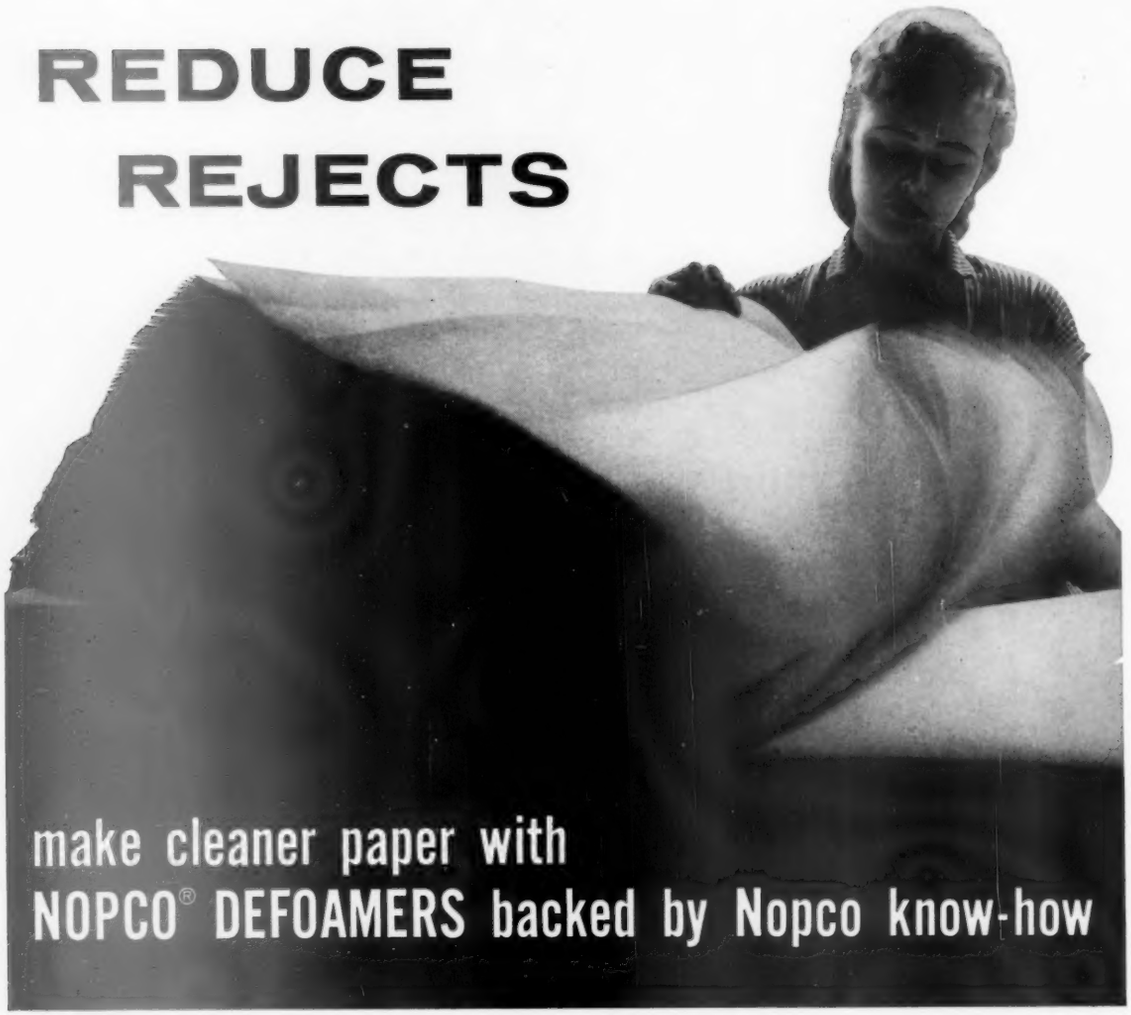
For complete information about Norgren's complete line of manual drain and automatic-drain compressed air line filters, call your nearby Norgren Representative, listed in your telephone directory—or WRITE FOR BROCHURE NA-1.

FOUNDED IN 1926

C. A. NORGREN CO.

3458 SOUTH ELATI STREET • ENGLEWOOD, COLORADO

REDUCE REJECTS



make cleaner paper with NOPCO® DEFOAMERS backed by Nopco know-how

One of the causes of a bad run of paper can be foam. Bubbles that carry fiber, size or color on their surface burst and leave light spots. Those that carry filler or dye leave dark spots. Either way, the sheet won't pass inspection.

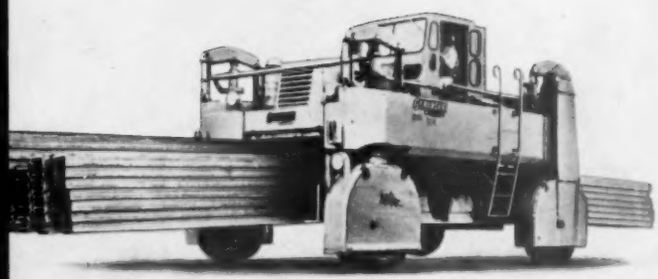
Many variables contribute to foam formation. Since each mill has its own distinct foaming problems—because of differences in equipment, type of water, chemicals used and running speeds—it takes a wide range of defoamers to meet them all. Let your Nopco specialist work with you to develop the best system for your conditions. Write for specific information and for literature.

NOPCO® **NOPCO CHEMICAL COMPANY**
60 Park Place, Newark, N.J.

Plants: Harrison N.J. • Richmond, Calif. • Cedartown, Ga. • London, Canada • Mexico • France
Manufacturing Licensees Throughout the World

TOWMOTOR-GERLINGER

offers you three complete capital-saving services!



1 YOU LEASE *without down payment!*

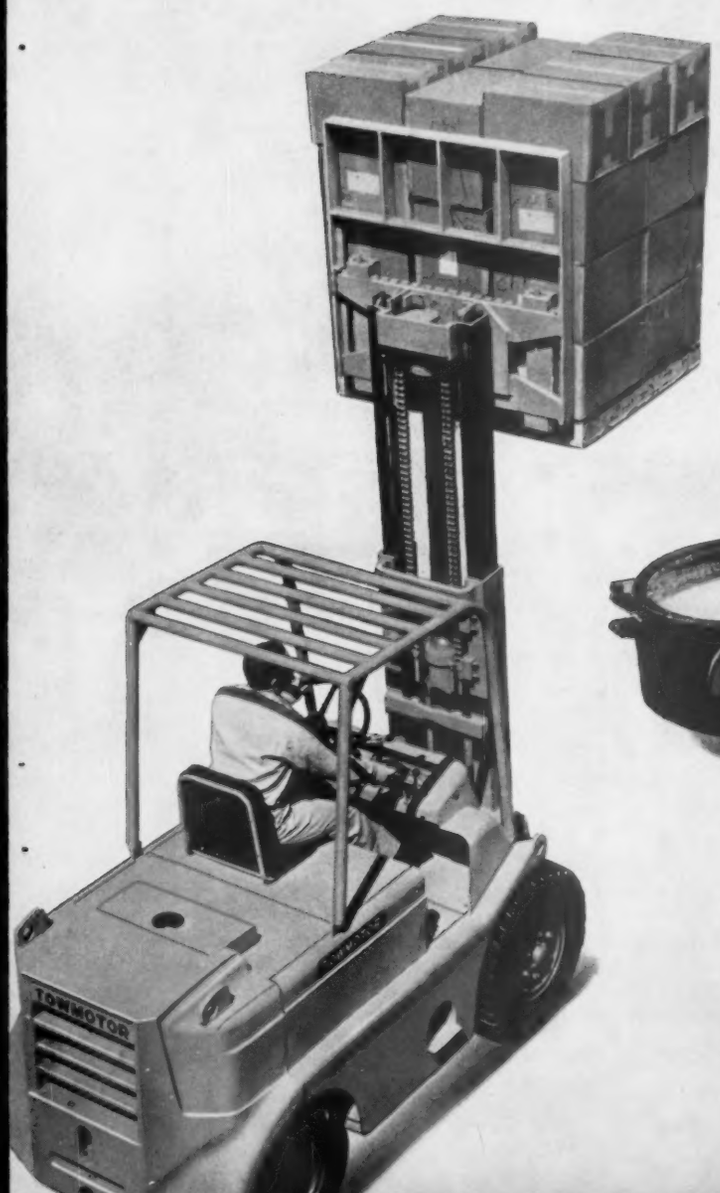
You don't make a *down payment* when you use the Towmotor-Gerlinger Lease-A-Truck Plan. You put T-G equipment to work on a continuous, year-'round basis. You just make a small monthly payment—paid out of savings the equipment produces.

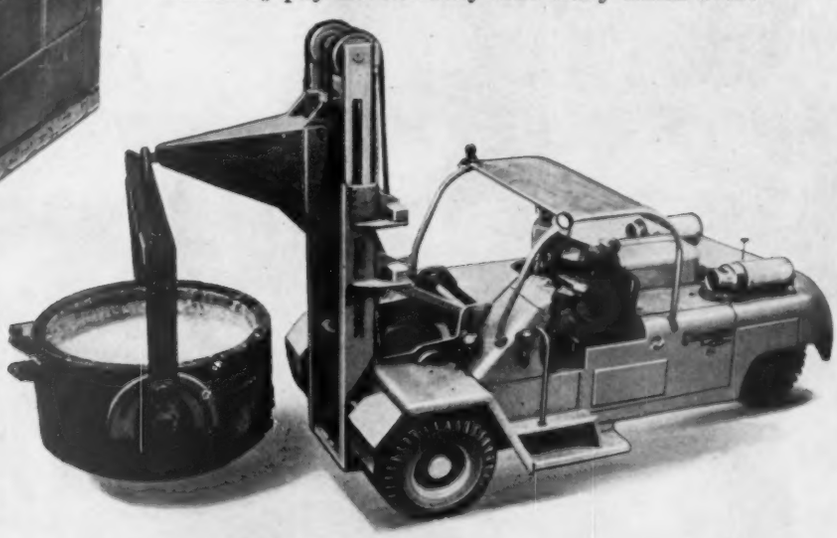
2 YOU RENT *without cash outlay!*

You don't tie up working capital when you *rent* Towmotor-Gerlinger fork lift trucks and material carriers. You put them to work immediately. You start cutting handling costs immediately. Your only cash outlay is one small monthly charge.

3 YOU BUY *and save as you pay!*

You don't pay cash for Towmotor-Gerlinger equipment when you use our low-cost Time Payment Plan. You make reasonable monthly payments. Low interest rates make it easy. Handling economies consistently pay the monthly cost many times over.





Complete factory-supervised maintenance can be included in *any* of the above plans! For complete information, write Towmotor-Gerlinger Rental Division, Towmotor Corporation, Cleveland 10, Ohio.

TOWMOTOR THE ONE-MAN-GANG® -GERLINGER

FORK LIFT TRUCKS, CARRIERS AND TRACTORS SINCE 1919

Gerlinger Carrier Co. is a subsidiary of Towmotor Corporation

John F. Steedley, Chief Engineer for So. Land, Timber & Pulp Corp.

He will assist Edward L. Cowan, exec. vice pres., in coordinating design and construction of firm's pulp and paper mill in Georgia; on completion, he will be in charge of engineering, maintenance and utilities. Prior to joining Southern Land, Mr. Steedley was with Bowaters Engineering & Development Inc., Calhoun, Tenn., as chief design engineer for Bowaters North American mills.

Karl Elderkin to Retire

Karl O. Elderkin, who headed the vast development and mill expansion of Bowaters in U.S.A. and president since 1957 of Bowaters Engineering and Development Inc., Calhoun, Tennessee, is to retire later this year. He will be 65 in October.

He will be succeeded as head of the central engineering and research activities of The Bowater Organization in North America by **George P. Hobbs**, mill manager of Bowater's Newfoundland Pulp and Paper Mills Ltd., Corner Brook, Newfoundland. Mr. Hobbs' successor will be **A. R. Stanford**, now assistant mill manager. No date has been set for the change of duties, but Mr. Hobbs is likely to leave Corner Brook for Calhoun in June.

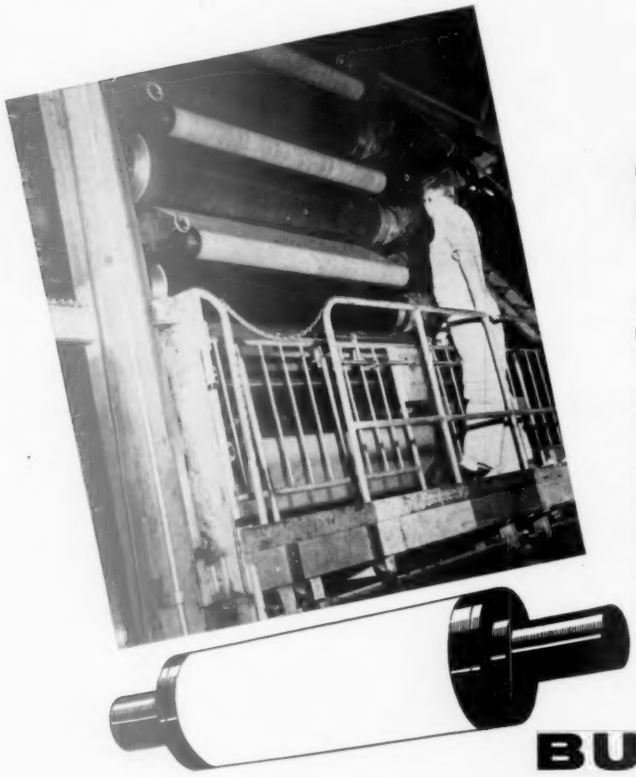
Mr. Elderkin, native of Nova Scotia, has been in the paper industry 30 years. He started as a civil engineer with the Mersey Paper Co., Liverpool, Nova Scotia. From 1929 to 1936 he was general manager of the Corner Brook mills, then owned by International Paper Co. In 1939 he became manager of the paper division of the Crossett Co., Crossett, Arkansas, and in 1952 he joined Bowaters Southern Paper Corp., Calhoun, as vice-president and general manager. He developed the world's fastest kraft and newsprint machines at these mills.

Mr. Elderkin is a past president of TAPPI (U.S.A.).

Midwest

Earnest E. Ludwig, retired vice pres. and mgr. of the Kalamazoo, Mich. office of Bermingham & Prosser Co., is named exec. sec. of the Paper Technology Foundation Inc., Western Michigan Univ.; Mr. Ludwig will be the first person to devote full attention to operation and development of the Foundation. . . . **Charles Swerdlove** is mgr. of Continental Can Co.'s Chicago folding carton plant; he began his career with the pre-merger Robert Gair Co. in 1950 as industrial engineer at Thomes River, Conn., and since April 1959 has been asst. mgr. at Chicago.

Herman Levin, formerly director of engineering for Pusey & Jones, becomes field engineer for the Paper Mill Machinery div., Patton Mfg. Co., Springfield, Ohio. . . . **H. E. Whitaker,** board chairman of Mead Corp., addressed a recent meeting of Ohio TAPPI on the subject, "Miami Univ. Pulp & Paper School and Its Prospects". He stressed importance of the school to Ohio papermakers and called on the industry to publicize more thoroughly its prospects for promising high school and college students. The gathering was at the Miami campus, Oxford, Ohio.



GREAT NAMES
in the Paper Industry:
Riegel Paper Corp.

Butterworth Calender Rolls are used in this supercalender stack at Riegel Paper Corp., Milford, N. J.

Butterworth Rolls, used by the leaders in the Paper Industry, are made to specification and checked for hardness, smoothness, and density before delivery. You can see the difference in finer finishes, extra hours of service without turning down or refilling.

Furnished new or refilled for every calendering need. And you get Butterworth Rolls at competitive prices. Quotations on request.

H. W. BUTTERWORTH & SONS COMPANY
Bethayres, Pa. Division of Van Norman Industries, Inc.

BUTTERWORTH
More than 60 years of Roll-Making Experience

deep ... deeper ... deepest blacks!

COLD WATER SOLUBLE ERIE BLACK GPNF

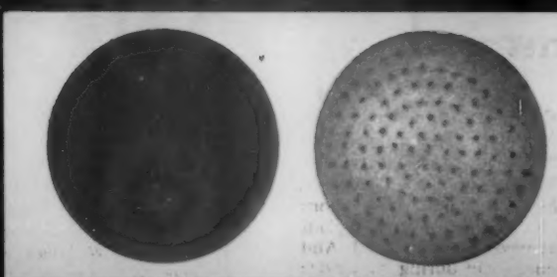
Outstanding solubility of this improved direct black is your key to cleaner, lower-cost dyeings.

Because of its extra efficiency, dye yields are materially increased. Rich, deep blacks are produced without bronzing. Specking is eliminated in lighter shades. Formulations dye on shade, time after time.

Another advantage: Erie Black GPNF is non-foaming . . . doesn't cause bubbles on the screen, eliminates consequent pinholing.

This exceptional product is another in the range of "new" National® Paper Dyes designed to give you modern dyestuffs engineered for continuous dyeing, dry application and other new money-saving dyeing techniques. Our representative will gladly discuss our quality improvement program with you.

Samples of Erie Black GPNF on request



To demonstrate comparative solubilities, 75 mg. each of Erie Black GPNF and a competitive type were dissolved in 50 ml. of cold water and filtered. Clogged filter paper (left) is typical of most competitive dyes. None filters as cleanly as cold-water soluble, non-foaming Erie Black GPNF (right).

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PULP & PAPER

Strictly Personal

Three men have been named staff engineers at Valley Iron Works Corp., Appleton, Wis.: S. T. Strachowski, born and educated in Poland, who served as an engineer at Polish and Italian paper mills prior to coming to the U. S. in 1959; **Howard K. Ainsworth,** a graduate of the Univ. of Maine formerly with Scott Paper Co. and Beloit Iron Works, and **O. N. Ellman Jr.,** project engineer for Crown Zellerbach Corp. and with Beloit Iron Works before coming to Valley. . . .

Two promotions are reported by the Wisconsin Rapids div. of Consolidated Water Power & Paper Co.: **James McIntyre,** chemist in the Research & Development div., becomes asst. to the supt. of the semichemical and recovery plant; **Warren Wickstrom,** process engineer in research and development, is named quality control engineer for the mill technical dept. At the same time, **Roger L. Steele,** technical mgr. of the Ahdawagam div., is appointed research supervisor.

Weis Bonfield Stentz

New Vice Presidents of PCA

Three new vice presidents have been named to head the eastern, central and western paperboard operations of Packaging Corp. of America, announces **J. C. Morris,** senior vice president-paperboard division.

Henry B. Weis, of Quincy, Ill., was named vice president, paperboard division-western region. He was with Central Fibre Products, now part of PCA, since 1936, heading its mill operations.

Gordon B. Bonfield, Sr., of Grand Rapids, Mich., was named vice president, paperboard divsion-central region. He was 38 years with American Box Board, another unit now in PCA, directing its plants and timber operations.

E. L. Stentz, of Wadsworth, O., was named vice president, paperboard division-eastern region. With Ohio Boxboard, third component in PCA, since 1947, he headed its Rittman, O., operations.

Brunner Lewis Allison

Packaging Corp. Names Container Vice Presidents

Packaging Corp. of America, with headquarters in Evanston, Ill., reports appointment of three vice presidents to head eastern, central and western container plant operations:

Herman L. Brunner, treas. and vice pres. of the former Central Fibre Products Co., heads the Container div.'s western region. **E. W. Lewis,** vice pres. and gen. mgr., Wisconsin operations, for American Box Board Co., takes charge of the central region. **S. F. Allison,** container div. vice pres. of the former Ohio Boxboard Co., becomes vice pres. for the eastern region.

(Packaging Corp. was the resulting firm in the merger of Central Fibre, American Box Board and Ohio Boxboard. The Container div. operates 22 plants in 13 states from New York to Utah.)

ON THE TOUGH JOBS!

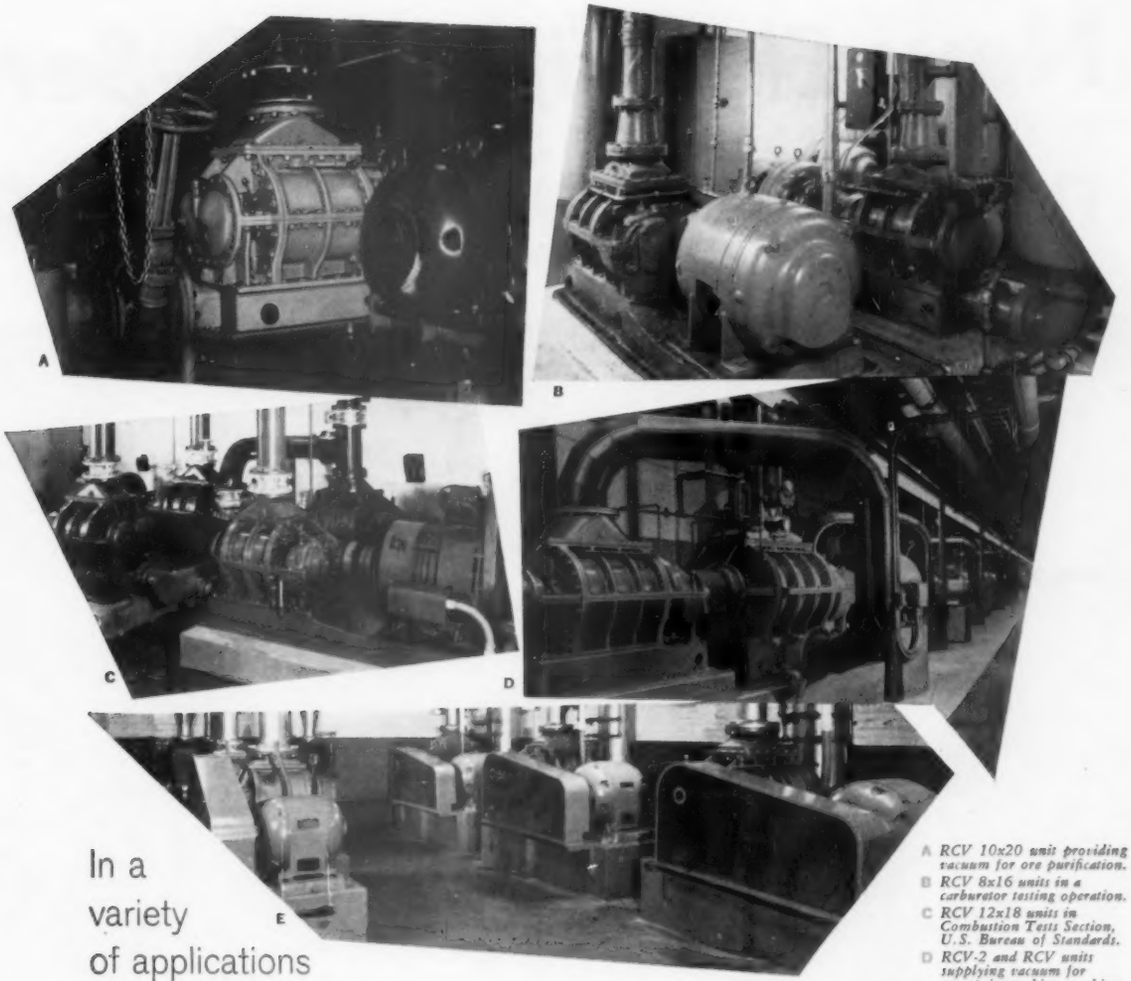
Nicolet Industries' specialty mill in Hamilton, Ohio, produces a wide variety of asbestos materials. It also produces a lot of headaches for most feltmakers.

Yet, over the years, Orr's custom engineered felts have established a high standard of satisfactory service here. In fact, an Orr top felt set a plant production record that has never been equalled. And —the experimental tonnage run during its service wasn't credited toward the production record! At the time of removal, the plant reported the felt still fit the machine excellently.

For details, ask your Orr representative or write us direct.

ORR FELT & BLANKET CO.

PIQUA, OHIO



In a variety of applications Roots Vacuum Pumps deliver

A *RCV 10x20 unit providing vacuum for ore purification.*
B *RCV 8x16 units in a carburetor testing operation.*
C *RCV 12x18 units in Combustion Tests Section, U.S. Bureau of Standards.*
D *RCV-2 and RCV units supplying vacuum for newsprint making machine.*
E *RCV 10x18 and 10x15 units serving cigarette-making machines.*

MORE CFM PER DOLLAR

The high operating speeds of Roots-Connersville blowers for vacuum service result in lower horsepower requirements. Power savings of as much as 25% are possible. What is more, the simple, rugged rotary positive design of these vacuum pumps provides additional savings in initial cost, long-term investment, maintenance and floor space. These advantages are being demonstrated in a wide variety of mining, paper making, chemical processing, general manufacturing and testing operations.

Type RVS vacuum blowers are offered for efficient low volume service. Designed to handle capacities ranging from 30 cfm to 1,000 cfm, they can operate up to 20" Hg. vacuum in single stage construction.

Type RCV units are available for air and gas handling capacities from 500 to 13,000 cfm and are recommended for vacuums up to 17" Hg.

Type RCV-2 compound units consist of two RCV's on a single driving shaft and are recommended for highest efficiency from 18" to 27" Hg. vacuum when handling capacities from 1,500 to 15,000 cfm.

Your nearest Roots-Connersville sales engineer can give you full details. Or write for Bulletin VP-158 (RCV) and S-RVS-159 (RVS).

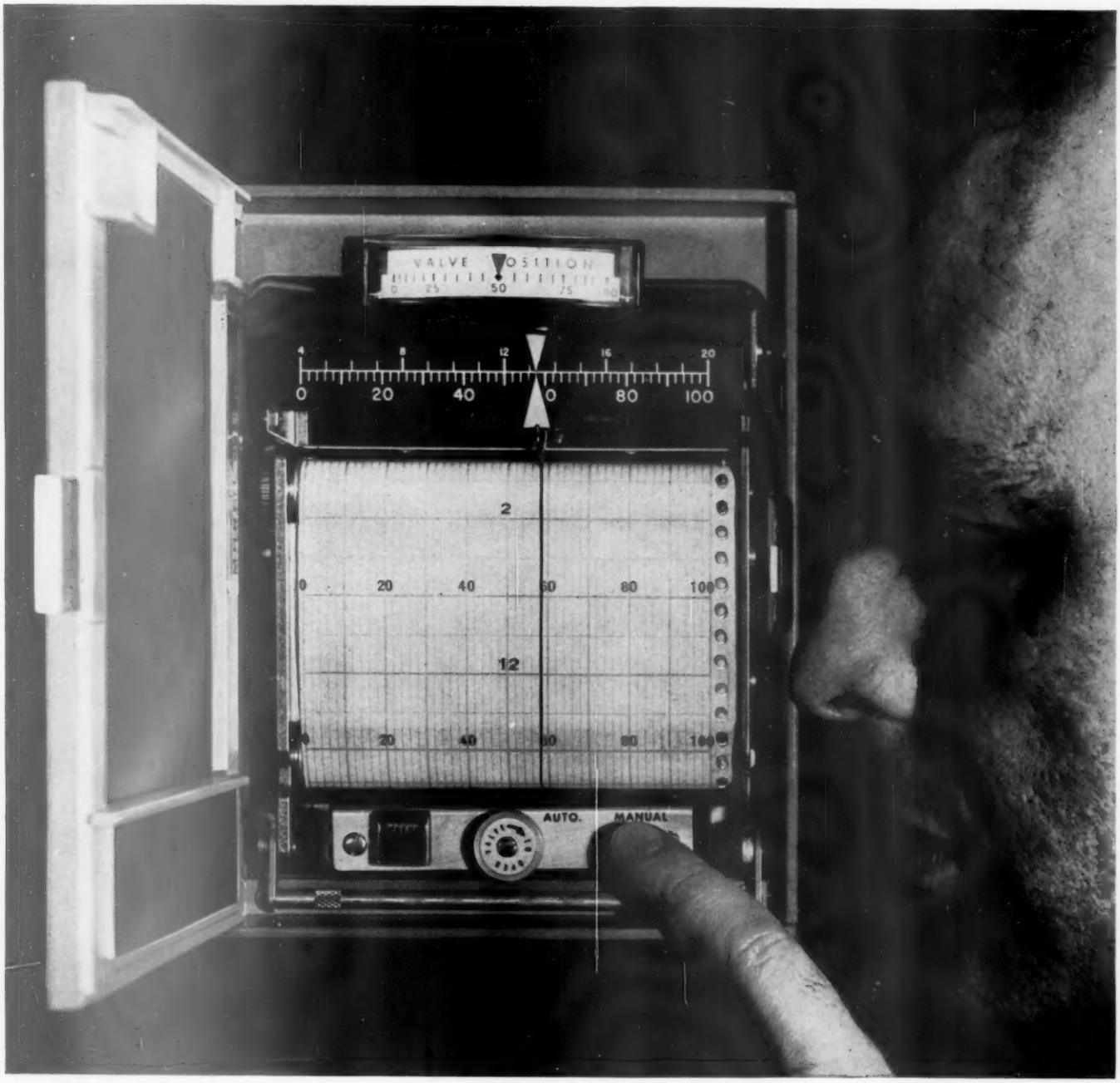
ROOTS
—first in air and gas handling equipment

ROOTS CONNERSVILLE
Rotary Positive Blowers & Motors • Gas Pumps • Vacuum Pumps • Spiramatic® Compressors • Centrifugal Blowers

DRESSER INDUSTRIES INC.
OIL • GAS • CHEMICAL
ELECTRONIC • INDUSTRIAL

ROOTS-CONNERSVILLE BLOWER DIVISION • 660 WILLOW AVE., CONNERSVILLE, INDIANA
In Canada—Roots-Connersville Blower (Canada), Ltd. • 629 Adelaide Street, West, Toronto

New *ElectriK Tel-O-Set*... needs in a single compact



everything an operator control station

This Honeywell electric control station meets all of your requirements for operator convenience.

One compact case houses *every* function the operator needs to supervise a control loop: indication of process variable and set point on the same scale; the controls needed to switch from automatic to manual; controls for manual control; and indication of valve position.

The *ElectriK Tel-O-Set* control station assures easier bumpless transfer than ever before available because there's no need to "line up" or "match" pointers. A null balance indicator eliminates guesswork, and the transfer doesn't have to be hurried since the valve remains under control during the transfer.

You can also order the controller with the proportional band, rate, and reset adjustments on the front of the panel conveniently located below the control station, or at the rear of the panel.

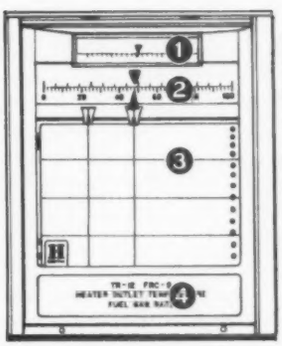
These are just a few of the features that make the new *ElectriK Tel-O-Set* control system an outstanding value. Your Honeywell engineer can give you complete details. Call him today . . . he's as near as your phone.

MINNEAPOLIS-HONEYWELL, Fall River, Massachusetts.

75th YEAR — PIONEERING THE FUTURE

Honeywell

First in Control — SINCE 1885



1. Valve position indicator continuously indicates controller output when on automatic control.
2. Set point index is conveniently located on same scale as process-variable pointer; you can see from a distance any deviation of variable from set point.
3. Rectilinear 4-inch calibrated chart is easy to read. At standard chart speed, four hours of recording is always visible. Unit has daily chart tear off or 30-day rewind. Both recorder and control station take the same 5½" x 6" panel cutout.
4. You get bumpless switching from automatic to manual control because you don't have to match pointers. In the balance position, the valve position indicator is part of a null circuit that compares controller output and manual output. When indicator reads 50%, both outputs are perfectly matched.

"WE RECOMMEND THIS LUBRICANT TO OUR CUSTOMERS"

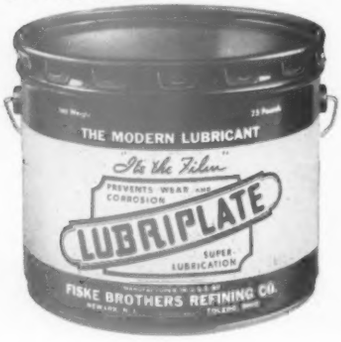
—says PACKAGE MACHINERY COMPANY
Springfield, Mass.

"We have found LUBRIPLATE Lubricants to be very effective and use them extensively in our machines. To assure the proper use of LUBRIPLATE Lubricants for re-lubrication, we place tags on our machines before shipment. Thus the purchasers of those machines know the LUBRIPLATE Product we recommend for each application and where to obtain it."

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE GREASE AND FLUID TYPE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE COSTS.

LUBRIPLATE is available in grease and fluid densities for every purpose . . . LUBRIPLATE H. D. S. MOTOR OIL meets today's exacting requirements for gasoline and diesel engines.

For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK" . . . a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.



Robert A. Callahan, Vice Pres., Mead Pulp Sales

In his new position with the Dayton, Ohio firm he will be in charge of the Chicago sales office, where he has been a sales representative since joining the company in 1954. Prior to that time, Mr. Callahan was a salesman for Abitibi Service Inc. in its Dayton office.

A native of Pennsylvania, he is a graduate of St. Francis College in Loretto. During World War II he served as a pilot in the U. S. Army Air Force.

Joseph D. Chadderdon is named supervisor of plant technical service for the KVP div. of KVP Sutherland Paper Co., Kalamazoo. He joined the KVP research laboratory in 1946.

William H. Dickinson, formerly gen. mgr. of the Electric Motor div. of A. O. Smith Corp., has been named vice pres. of Midland-Ross Corp. and gen. mgr. of the Owosso (Mich.) div.; he succeeds **David E. Walbert,** who becomes group vice pres. of Midland-Ross in charge of the following divisions: Owosso, Cleveland, Ross Engineering, Waldron-Hartig and Ross Engineering of Canada Ltd.

Named Midwest mgr. for the Western Precipitation div. of Joy Mfg. Co. is **Eugene F. (Red) Scherr,** on the Chicago staff for the past 15 years. . . . The Container div. of International Paper Co. announces promotion of three executives to new positions in the sales dept.: **S. R. Van Horne,** mgr. of the Chicago plant, becomes Great Lakes district sales mgr.; **J. R. Estes,** Kansas City plant mgr., Missouri Valley district sales mgr. and **R. D. Jollay,** mgr. of the Wooster, Ohio plant, Ohio Valley district sales mgr. . . .

Vinson Krapfel, director of purchases for Consolidated Water Power & Paper Co., Wisconsin Rapids, died in Florida recently following a brief illness. . . . **Robert L. Cashen,** administrative vice pres. of H. K. Ferguson Co., Cleveland engineers and builders, died April 6.

Robert L. Halsted is named mgr. of the Milwaukee district of Allis-Chalmers Mfg. Co.'s Industries Group; he succeeds **A. P. Bowman,** who becomes mgr. of Industrial Equipment div. sales at North Central regional headquarters, Chicago. —Don W. Zeigler.

Walter Paepcke, Founder and Head of C.C. of A., Dies at 63

Walter P. Paepcke, chairman and chief executive officer of Container Corp. of America, largest producer of paperboard containers and packaging materials, died Apr. 13 in Chicago at the age of 63.

Mr. Paepke founded Container Corp. in 1926 and was its president until 1946, when he became chairman. He is survived by his widow, **Elizabeth,** and three married daughters. He also was the founder and builder of a now world-famed winter ski resort and cultural center for leading artists of all kinds, Aspen had been a ghost town of the West when he selected it for his development.

Mr. Paepcke was buried in Aspen.

Dixon

Schoenhofen

Wesley M. Dixon, Chairman and Chief Exec. Officer, Container Corp.

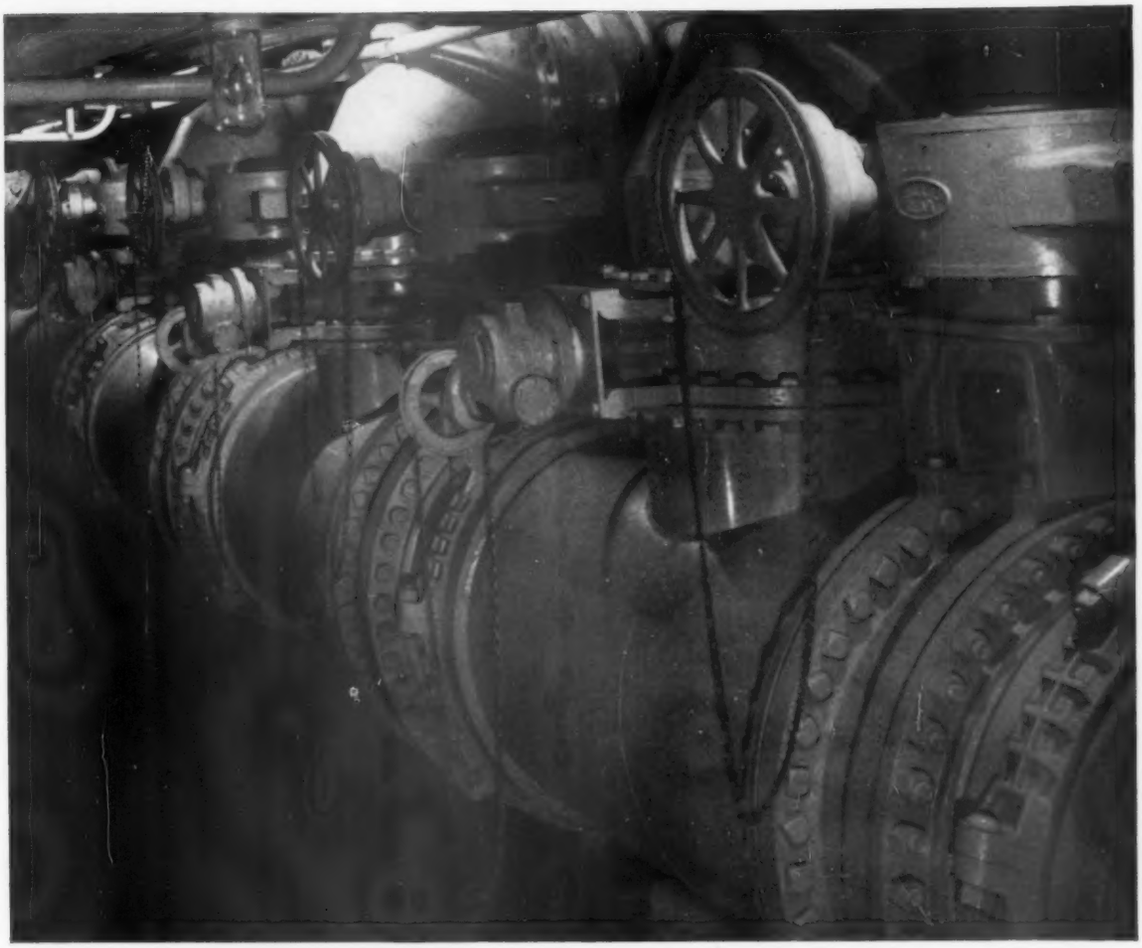
Retaining his post as president, he succeeds the late **Walter P. Paepcke** as head of the nationwide packaging firm. In other recent action taken by the CCA board of directors, **Leo H. Schoenhofen,** senior vice pres., becomes a director; **Harry E. Green,** gen. counsel, is vice pres. and gen. counsel, and **Edward K. Meiser** is given the post of secretary.

A native Chicagoan, Mr. Dixon began his business career with Butler Bros. in 1919. From 1922 to 1925 he was vice pres. and director of Cornell Wood Products Co., Chicago, resigning to become president of Dixon Board Mills, Carthage, Ind. In 1928 he was named president of Sefton Mfg. Co., which merged with Dixon Board to become Sefton Inc. In 1930, when Sefton merged with Container Corp., Mr. Dixon became vice pres. and director, an office he held until election as president and member of the executive committee in 1946.

Mrs. Swanson Dies

Mrs. Lucile H. Swanson, 63, wife of **Walter H. Swanson,** Kimberly-Clark Corp. vice president of corporate product planning and a former president of TAPPI, died unexpectedly at her home April 23. Survivors include Mr. Swanson, a daughter, a son and one granddaughter.

ALLIS-CHALMERS



One of the compact groups of A-C rubber-seated butterfly valves at the pumping station of a southwestern municipality.

The right valve "repeats itself"

66 Allis-Chalmers rubber-seated butterfly valves line up to prove it

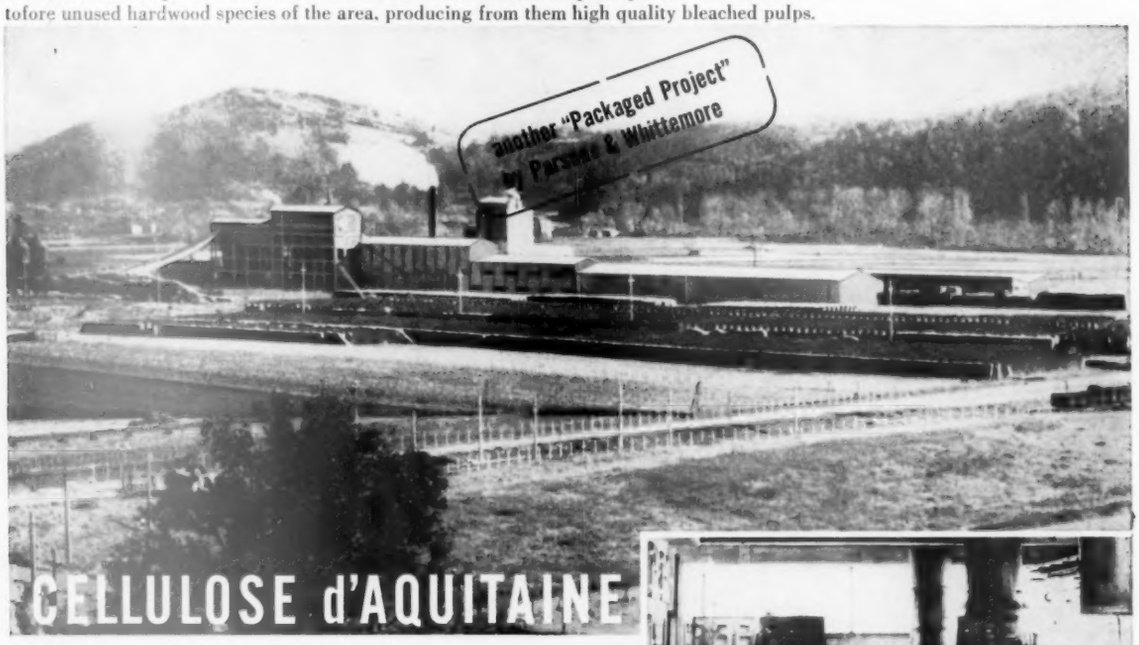
Economical, dependable, easy to operate: Allis-Chalmers rubber-seated butterfly valves give you these and so many more advantages that it's easy to appreciate their universal popularity. Full body protection is provided by a rubber seat which extends through the valve body and over the flange faces. Angle seating protects the rubber seat and permits seating adjustment without costly disassembly.

A-C manufactures a complete line of metal and rubber-seated butterfly valves in a wide range of types and sizes in order to provide the best valve for a given application. Compact design joins with light weight to bring other savings in both space and cost of construction.

• • •

For details on butterfly valves, cone valves and ball valves, contact your A-C representative or write **Allis-Chalmers,** *Hydraulic Division, York, Pa.* A-1309

The Cellulose d'Aquitaine mill in Southern France consumes as its principal raw material heretofore unused hardwood species of the area, producing from them high quality bleached pulps.



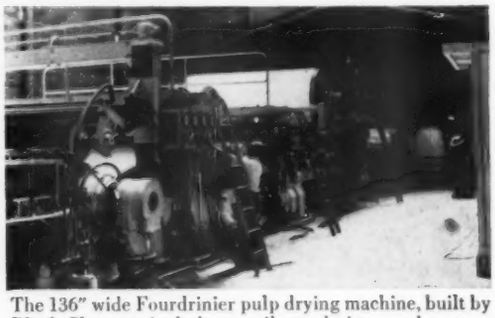
First pre-hydrolysis kraft pulp mill in France

Making France self-sustaining in the production of nitrating grades of cellulose, the mill of Cellulose d'Aquitaine, St. Gaudens, has been in operation since the summer of 1959 and produces up to 120 tons of nitrating pulp or 170 tons of bleached paper grade pulp per day.

The Parsons & Whittemore-Lyddon Organization had full responsibility for design and construction of the plant. It is but one of fourteen mills now in various stages of development for which the Organization provides technical supervision, complete equipment and other important services under a global contract.

Parsons & Whittemore-Lyddon's staff of renowned pulp and paper making experts is backed by the Organization's international machinery manufacturing and sales facilities. Our experts are prepared to assist you in planning, designing, financing, constructing, equipping and operating pulp and paper mills in any country having suitable wood or agricultural fibers. For full information on any or all of these services, write to our nearest office.

Cooking of beechwood chips is carefully controlled on this digester operating floor. Three of the four digesters are shown. All of them are constructed with special alloy lining to permit a pre-hydrolysis cooking stage at extremely low pH values.



The 136" wide Fourdrinier pulp drying machine, built by Black-Clawson, includes cantilever design, modern vacuum equipment and hydraulic press controls.

THE PARSONS & WHITTEMORE / LYDDON ORGANIZATION

World leaders in the development of pulp and paper mills for the use of local fibers

18-19 Savile Row, London W.1, England — 5 Rue Jean Mermoz, Paris 8°, France

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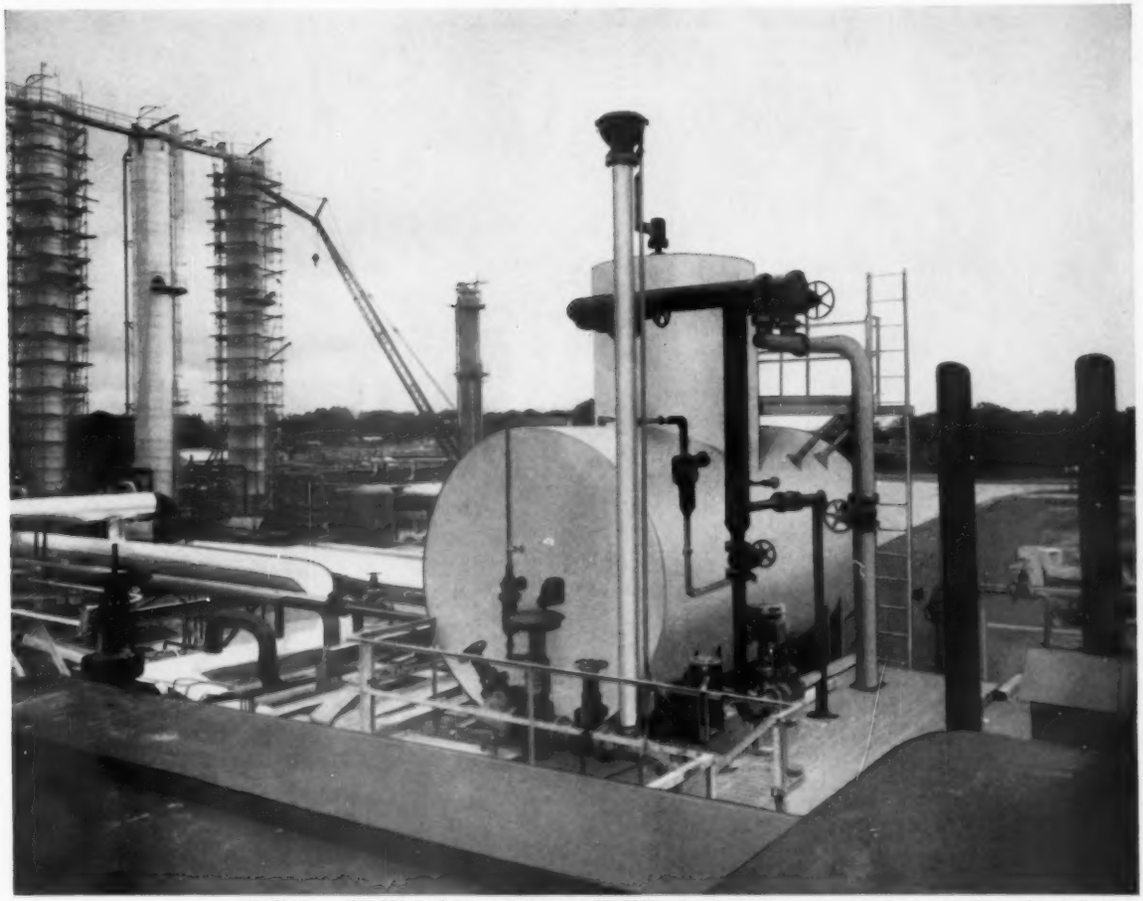
ALLIS-CHALMERS

A-1233



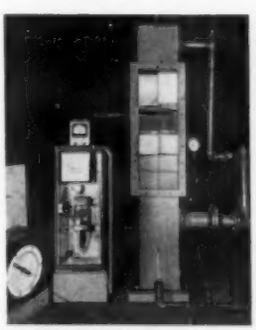
Allis-Chalmers 215,000 lb./hr. tray deaerator with 7200-gallon horizontal storage tank at a southern chemical plant.

Corrosive gases removed

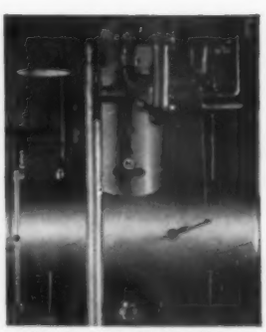
from boiler feedwater with Allis-Chalmers deaerators

Positive corrosive gas removal by Allis-Chalmers tray-type deaerators is proved by a pilot unit (below) equipped with a continuous oxygen analyzer and recorder. It utilizes unique counterflow design for thoroughly scrubbing dissolved gases from the water surface. Design produces maximum heating of water with minimum of steam loss in venting. Effective deaeration is guaranteed under all loads.

Ruggedly constructed, A-C deaerators employ 16-gauge 18-8 stainless steel on all equipment exposed to corrosive gases. No moving parts assures quiet operation, minimum maintenance. Inspection is easy through ample access doors and manholes. Service? Seventy-seven district offices throughout the nation. Your A-C water conditioning engineer can give you full deaerator details. **Allis-Chalmers,** Power Equipment Division, Milwaukee 1, Wisconsin.



Pilot deaerator permits evaluation of tray designs.



"Standard" deaerators for small industrial power plants.

that's what you want in a fuel...

what you get in B&O Bituminous!

Sure, bituminous coal is power-packed—it's prepared to suit any industrial utilization—its source is most convenient to industry. But, bituminous gives you the *extra* that no other fuel can—*nearly inexhaustible reserves, always available!*

B&O BITUMINOUS COALS FOR EVERY PURPOSE

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John Kauffman, Asst. Mgr., Hamilton Paper Michigan Div.
He has been on the staff of the Plainwell, Mich. mill since 1950 and also holds the position of Michigan div. chief engineer and secretary of the firm.

George D. Jernegan, Dean of Students, Inst. Paper Chemistry
Mr. Jernegan, widely known as author of "A Guide to Career Opportunities in the Pulp & Paper Industry," has been on the staff of the Appleton, Wis. school since 1954, has served as director of continuing education since 1958. He will continue to hold this position.

Pulpwood

Close to 60 representatives of woods companies whose operations are located in Northwestern Ontario—from the Hearst area to the Manitoba boundary—attended the recent annual meeting of the Northwestern Ontario Timber Operators' Association in Port Arthur, Ont.

P. V. LeMay, woods manager, Marathon Corp. of Canada Limited, Port Arthur, was re-elected president of the Association. **J. H. Merrill,** vice-president i/c woodlands, Great Lakes Paper Co. Ltd., was re-elected vice-president and **R. A. Hallonquist** was re-appointed secretary-manager.

G. M. Rhebeck, Rayonier, Inc., Hoquiam, Wash., succeeds **Charles Nichols,** Crown Zellerbach, Portland, Ore., as president of Pac. Northwest Loggers Assn.; **T. R. Sheldon,** Scott Paper Co., Everett, is the group's newly elected vice president. . . .

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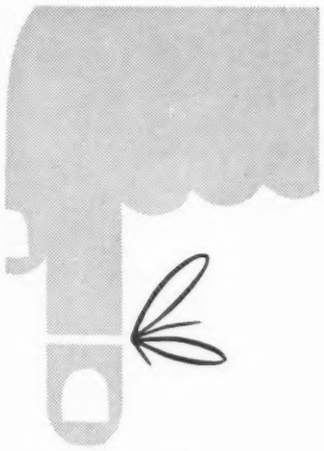

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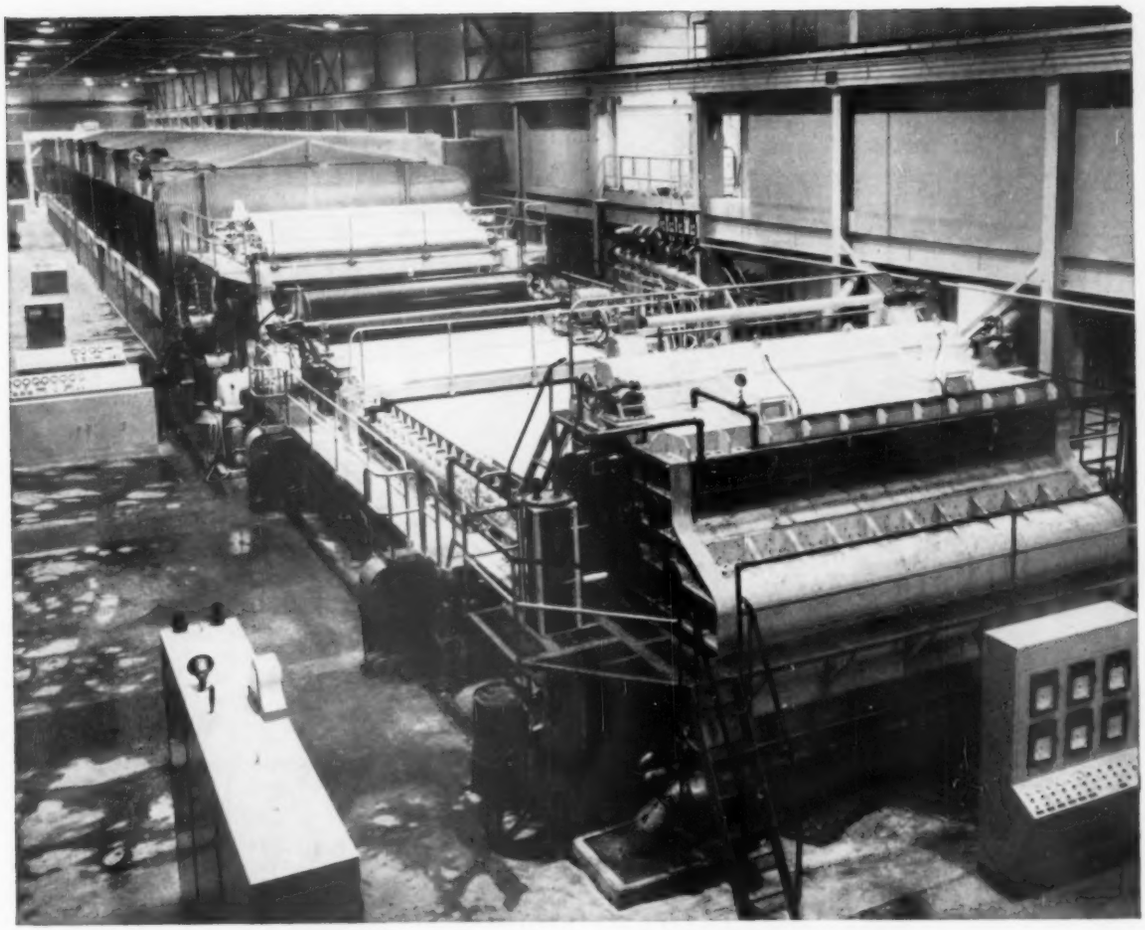
INTERNATIONAL WIRE WORKS, MENASHA, WIS. AN AFFILIATED COMPANY



#6 Fine Paper Machine
at Howard Smith-Cornwall was
built by Dominion Engineering and
installed in record time.

It incorporates many
new design features.

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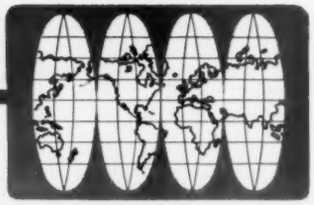

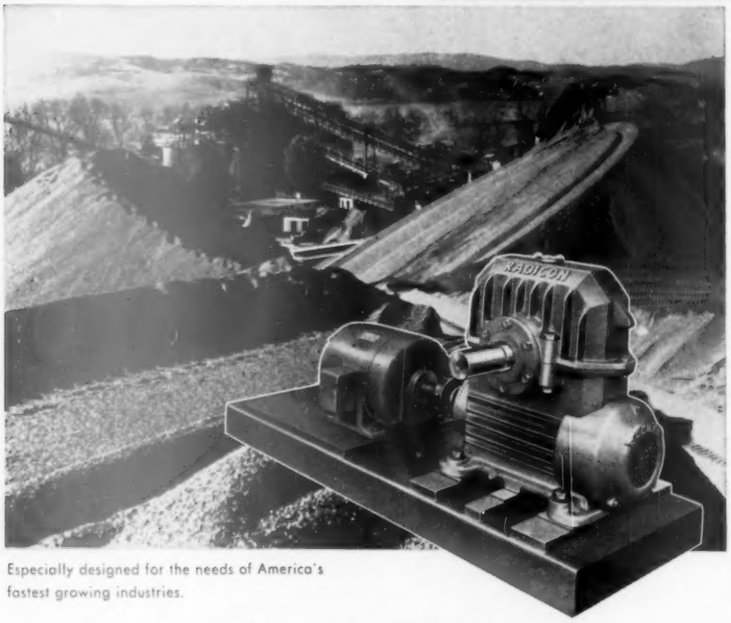

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the new RADICON COMPLETE DRIVES

"Eliminate drive design problems with the versatile new Radicon Complete Drive—just position—set six bolts and you're ready for service."

There's *no* do-it-yourself involved. Simply select the drive (easy as a gearmotor)—and set! Radicon reducers and motors are already carefully shimmed and aligned on heavy fabricated steel base plates of double box construction, firmly ribbed for rigidity. This means minimum stress at the flexible coupling—low maintenance, with complete versatility for service.

Fan-cooled Radicon Speed Reducers, such as type RHU in the above Complete Drive, are being specified for replacement and OEM in many industries these days. They have learned that Radicons are designed, not for show — but for rugged work in all extremes of temperature, dust, dirt and rain.

Immediate delivery 3" to 12", all standard ratios from 5:1 to 60:1. Radicon complete drives supplied by all authorized David Brown factory branches and distributors.

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Gear Products for: Mines, paper and pulp mills, chemical plants, food processors... conveyors, hoists, agitators, screens, deckers, filters, canning machines, and other industrial equipment.

T. Schantz-Hansen, director of the Univ. of Minnesota's 3,700-acre Cloquet Forest Research Center and the Itasca Forestry & Biological Station, has retired after more than 40 years on the university staff. He was named head of the School of Forestry's Cloquet station in 1924 and director at Itasca in 1940. His latest research—in cooperation with Wood Conversion Co.—is in the marketing of pulpwood on a weight basis.

Gerald D. Pickford has retired as head of the Land & Management section, U. S. Forest Service, Portland, Ore., to join the Hawaiian Div. of Forestry to establish a research program for the Islands. . . . In another overseas change, **William E. Bullard Jr.** leaves the Pacific Northwest Region, U. S. Forest Service, Portland, to become water and forestry engineer for the Republic of Guinea under the United Nations OPEX program. His new headquarters are at Conakry, capital city of this equatorial west African nation.

Crown Zellerbach Corp. promotions: **G. H. Harrington,** resident forester at the Tahkenitch Tree Farm, Gardiner, Ore., becomes log buyer and seller for the Tillamook div. **Glen F. Hawkins,** Columbia logging supt., succeeds **E. S. Young** as Tillamook div. supt. when the latter retires July 1; **Robert C. Lindsay,** now contract logging supervisor at the Netarts tract, becomes Columbia div. supt.

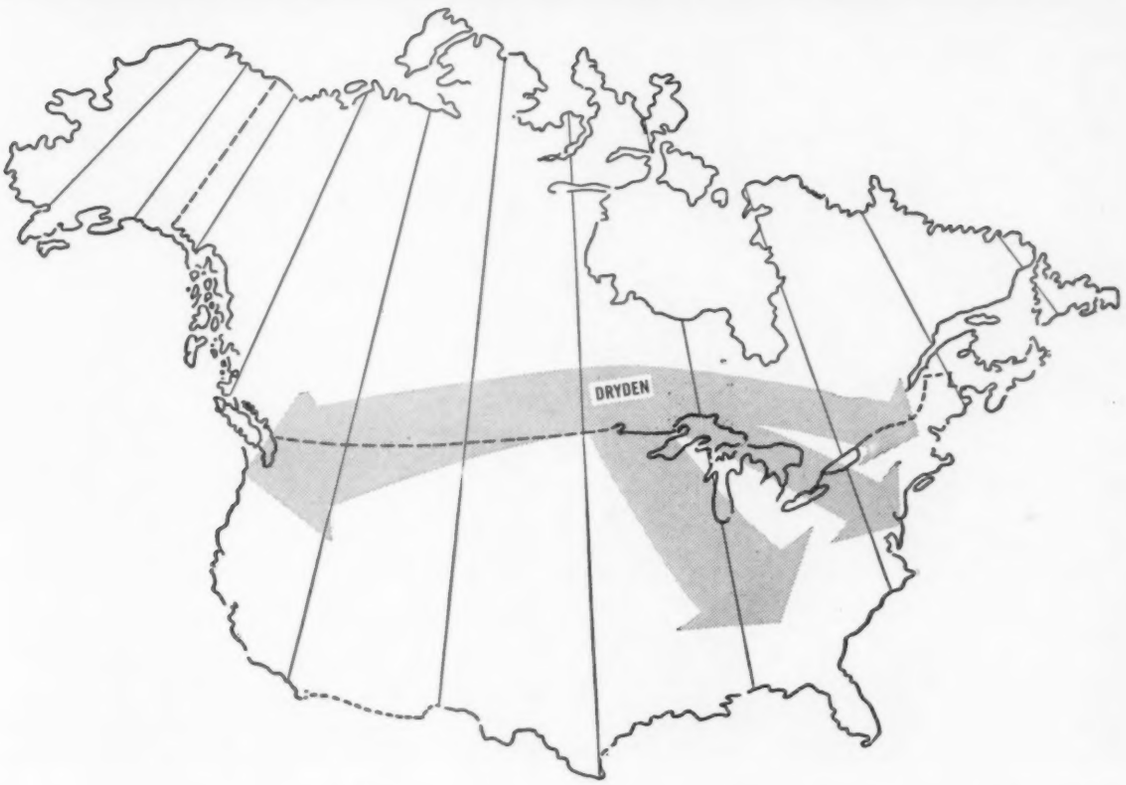
Canada

Several promotions at Anglo-Newfoundland Development Co. Ltd. have been announced, including appointment of **James Delaney,** paper mill supt. as paper mill consultant; **John Ryan** and **Cyril Down** have been made paper mill supts. . . . **Philip A. Sargent,** vice pres. in charge of converting operations, Canadian International Paper Co., announces that **H. Les Atkinson** has been named president of the subsidiary Victoria Paper Co.; Mr. Atkinson was formerly vice pres. and gen. mgr.; **Edward S. Reid** has been made Victoria's gen. mgr. . . . **A. M. Cuthbertson** has taken over his responsibilities as asst. mgr., Sault Ste. Marie div., Abitibi Power & Paper Co. Ltd. . . .

Bernard Panet-Raymond, director of industrial relations, becomes vice pres. for industrial relations, Quebec North Shore Paper Co.; **Robert M. Schmon,** asst. to the exec. vice pres., is named asst. exec. vice pres.; **Peter K. Harakas,** chief engineer, is vice pres., engineering. . . .

W. P. Nesbitt has assumed his new duties as gen. mgr., Pulp & Paper div., Howard Smith Paper Mills Ltd. . . . **B. I. Howe,** until recently with Anglo-Canadian Pulp & Paper Mills Ltd., Quebec, P. Q., is now paper mill control engineer with Quebec North Shore Paper Co., Baie Comeau.

DRYDEN'S LOCATION ASSURES FAST DELIVERY



Dryden has long been known for its efficient Traffic Department...always ready to ship on a few hours' notice. And the shipments get to our customers in record time, because of Dryden's strategic location and proximity to major rail, highway and water routes.

A glance at the map makes it obvious why Dryden can and does make 4-6 day deliveries to the Midwest. But did you know that we also can give the same kind of service to our customers in Eastern United States and Canada? Dryden maintains inventories in boxcars, ready to go at a moment's notice.

Ask your laboratory to compare Dryden Bleached Sulphate with the best quality pulp you know. You, too, will say that it deserves all the endorsements—*and production testimonials*—it now enjoys. Order a trial shipment today. You will be amazed at how quickly you receive it.

DRYDEN PAPER COMPANY, LIMITED
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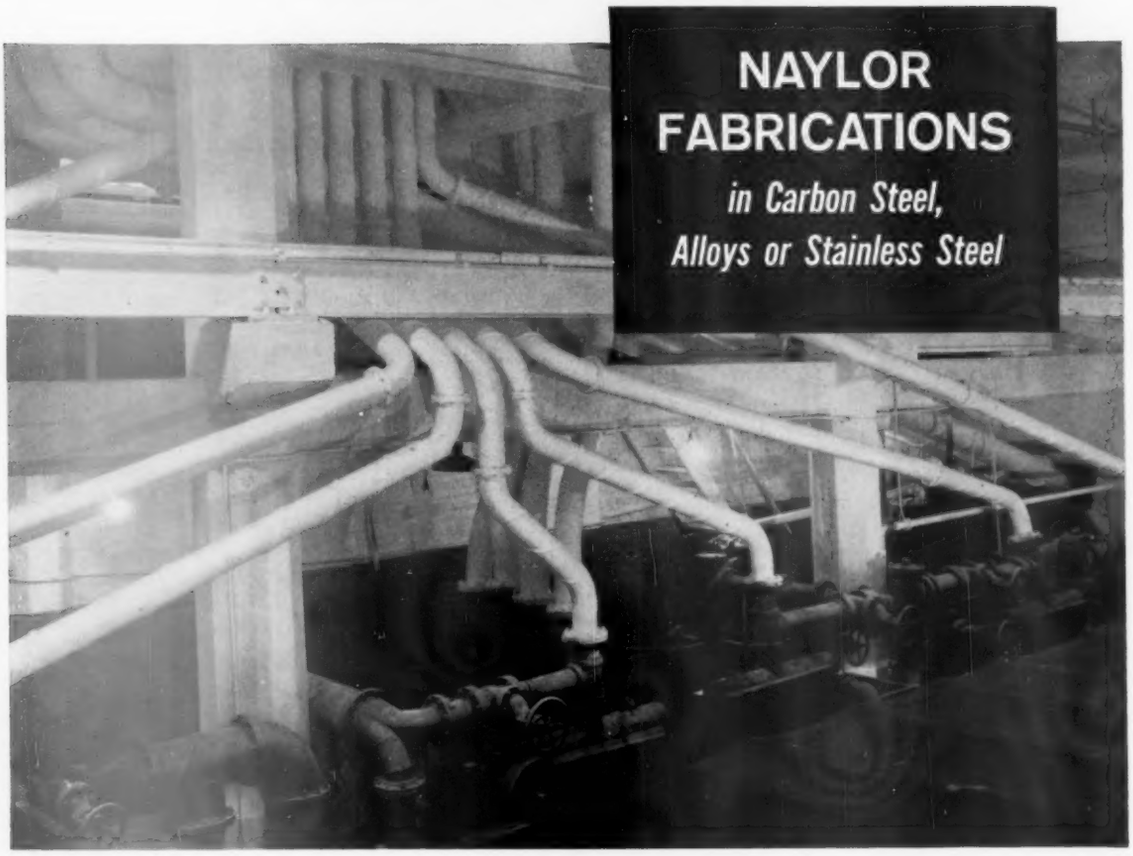

For pipe, fittings or special piping fabrications, look to NAYLOR fabrication service. Here is a dependable source for close-tolerance production to your most exacting specifications—from carbon steel, alloys or stainless steel.

NAYLOR pipe sizes range from 4″ to 30″ in diameter and wall thickness from 14 to 8 gauge.

Special piping fabrications from 3″ to 44″ in diameter and wall thickness up to 3/8″.

Standard fittings are available from stock.

Write for Bulletin No. 59 or send specifications for quotation.

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Visit our Hospitality Suite at the TAPPI Coating Conference, Edgewater Beach Hotel, May 23-25.

Quality seam construction needs a high solids paste... the most economical product to fill the bill is...

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WRITE OR PHONE *Corn Products for expert technical assistance... helpful data on these fine products for Papermakers:* **BUFFALO® · GLOBE® · TEN-O-FILM® · MIL-O-FILM® · TEX-O-FILM® · FOXHEAD® starches · GLOBE® dextrines and gums · EXCELLO® dextrines.**

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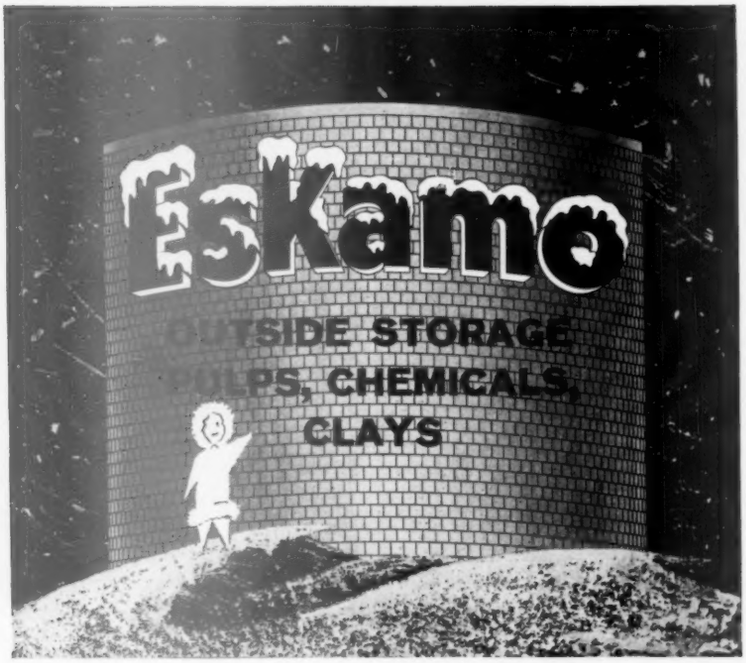

put your tanks & chests *Outside*

SAVE BUILDING COSTS. It costs approximately $15,000* to house a 25′ I.D. x 40′ high tank. This cost is eliminated when you use an ESKAMO Tank and *put it outside.*

NO MAINTENANCE. Constructed of reinforced concrete with acid-proof VersaTILE ceramic surfaces inside and out, ESKAMO Tanks are insulated with S & E Insulation to maintain desired operating temperatures. *No outside insulation and weatherproofing to maintain* as with insulated tanks of concrete, steel or wood.

LOW B.T.U. LOSS. At 35°F *below zero* it takes more than twelve hours to lose 1°F. in an ESKAMO Tank.† No freezing—no clinging to inside walls.

CUSTOM DESIGN. Each installation is designed in accordance with applicable ACI, CRSI Codes, and other recognized standards to meet your specific chemical, mechanical and loading requirements. ERECTION is always performed by skilled, direct-employed crews.

EsKamo: Trademark of the Service & Erection Co.

Representatives:
Longview, Washington
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*Area includes working room around and above tank at $.40 c.f.
†A 25′ I.D. x 40′ high tank three-quarters full of stock at 100°F

SERVICE & ERECTION CO.

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Designers and Builders of VersaTILE Linings and Tanks

Marcel Barsalou is now manager of pulp and paper-board mills of Fraser Companies, Edmundston, N.B., succeeding **C. T. Clark,** recently named vice president, manufacturing. He has been with the company since 1937, and prior to his recent promotion was assistant mgr. of mills.

Among recent appointments at Ontario Paper Co. are: **Bruce McAdam,** assistant to the divisional mgr., Thorold; **Ken Voss,** gen. supt. at Thorold; **Jack Cairnie,** assistant gen. supt. at Thorold; **Richard Wetmore,** groundwood supt.; **Harry Richards,** assistant groundwood supt.; **Percy Neil,** sulfite pulp consultant, Baie Comeau, reporting directly to **Tom Rust,** gen. supt.; **Norman Myles,** sulfite supt. in charge of the sulfite mill, wood room and wood yard at Baie Comeau; **Bernard Baril,** assistant sulfite supt.

H. G. Welsford, president of Dominion Engineering Co. Ltd., Montreal, has been appointed chairman of the board, and **R. J. Barrett** has succeeded him as president and chief executive officer. Mr. Welsford continues as president of Dominion Bridge Co. **A. H. Cowie** has been named vice pres. of Dominion Engineering and **C. D. Lewis** exec. vice pres., heavy machinery group. Mr. Lewis was formerly mgr. of the paper machinery div.; he is succeeded by **George E. Plant,** at one time Vancouver, B.C. mgr. and recently on the headquarters staff at Lachine, Que. **P. H. Goldsmith,** sales mgr. in the paper machinery div., becomes special consultant and assigned liaison work with the paper industry. **E. P. Vaughan** succeeds Mr. Goldsmith as sales mgr. Continuing as chief engineer of the division is **S. C. Williams.**—C. L. Shaw.

John R. Nicholson Appointed B.C. Forest Industries Head

He will represent the Canadian Pulp & Paper Association, Western branch, and also the principal British Columbia lumber, plywood, logging and shingle industries in high-level policy matters concerned primarily with legislation and industry-wide marketing.

A lawyer, Mr. Nicholson has had a distinguished career in industry, directing various Canadian government defense agencies during the war, later organizing Polymer Corp., synthetic rubber organization at Sarnia, Ont.

PHOTO SHOWS two nearly identical coating colors filtering through 100 mesh screens. Both colors contain 45% solids and 16 parts of adhesive to 100 parts of pigment—with a 2/1 casein-latex ratio. Color at right contains a conventional latex. Color shown at left was formulated with FLOTROL C. Its faster filtering gives dramatic evidence of lower viscosity. And the lower viscosity of FLOTROL C color formulations means faster screening, faster preparation, better all-around results!

FORMULATE WITH DEWEY AND ALMY'S PAPER COATING LATEX

flotrol C

(formerly Darex Latex C)

From a test you can make (see description above) comes solid proof! When you formulate with FLOTROL C you can keep solids up . . . yet keep viscosity down. And that means faster coating . . . quicker, more economical drying!

FLOTROL C is recommended in high solids formulations for high shear coaters like transfer roll and trailing blade. Or, use FLOTROL C in low solids formulations for air knife and reverse roll coaters.

Both ways, FLOTROL C gives low pattern characteristics that mean smoother, more uniform coatings — plus high gloss with less calendering.

For complete information, write to us, attention Organic Chemicals Sales, at the address below.

W. R. GRACE & CO.
DEWEY AND ALMY CHEMICAL DIVISION
Cambridge 40, Massachusetts

Check these 5 big advantages of formulating with Flotrol C:

- Higher solids content for faster coating, heavier coating weights, less heat for drying
- Lower pattern for smoother, more uniform coverage
- Cuts amount of expensive ingredients needed to achieve desired fluidity
- Permits achievement of desired viscosity with less latex
- Means faster screening and preparation of coating color

NASH

Paper Mill Vacuum Pumps Designed for Every Desirable Quality, and the First of these is

DEPENDABILITY

When just 3 days lost production on a paper machine can cost more than the vacuum pumps, dependability is the vital factor in pump selection.

Nash Vacuum Pumps are dependable because they are built big enough and heavy enough to stand the pounding of around the clock production, day in and day out. They are reliable because they have only one moving part, and that rotating without wearing metallic contact. They are reliable because the heavy duty ball bearings are located outside the pump casing where they are accessible. They are reliable because they operate at the low speeds necessary for long life and reliable operation.

Nash Vacuum Pumps have been proving their ability to insure uninterrupted production in leading paper mills for nearly a half century. Install them and be safe.

The new Nash 5308-A shown above, has four separate suction inlets, each of which functions independently of the others. This offers the machine operator great flexibility, since these may be used in any desired combination to produce a variety of capacities and vacuums.

NASH ENGINEERING CO.

South Norwalk, Connecticut, U.S.A.

NEWS OF SUPPLIERS TO THE INDUSTRY

F. R. Forrest, Pulp and Paper Consulting Eng., Allis-Chalmers

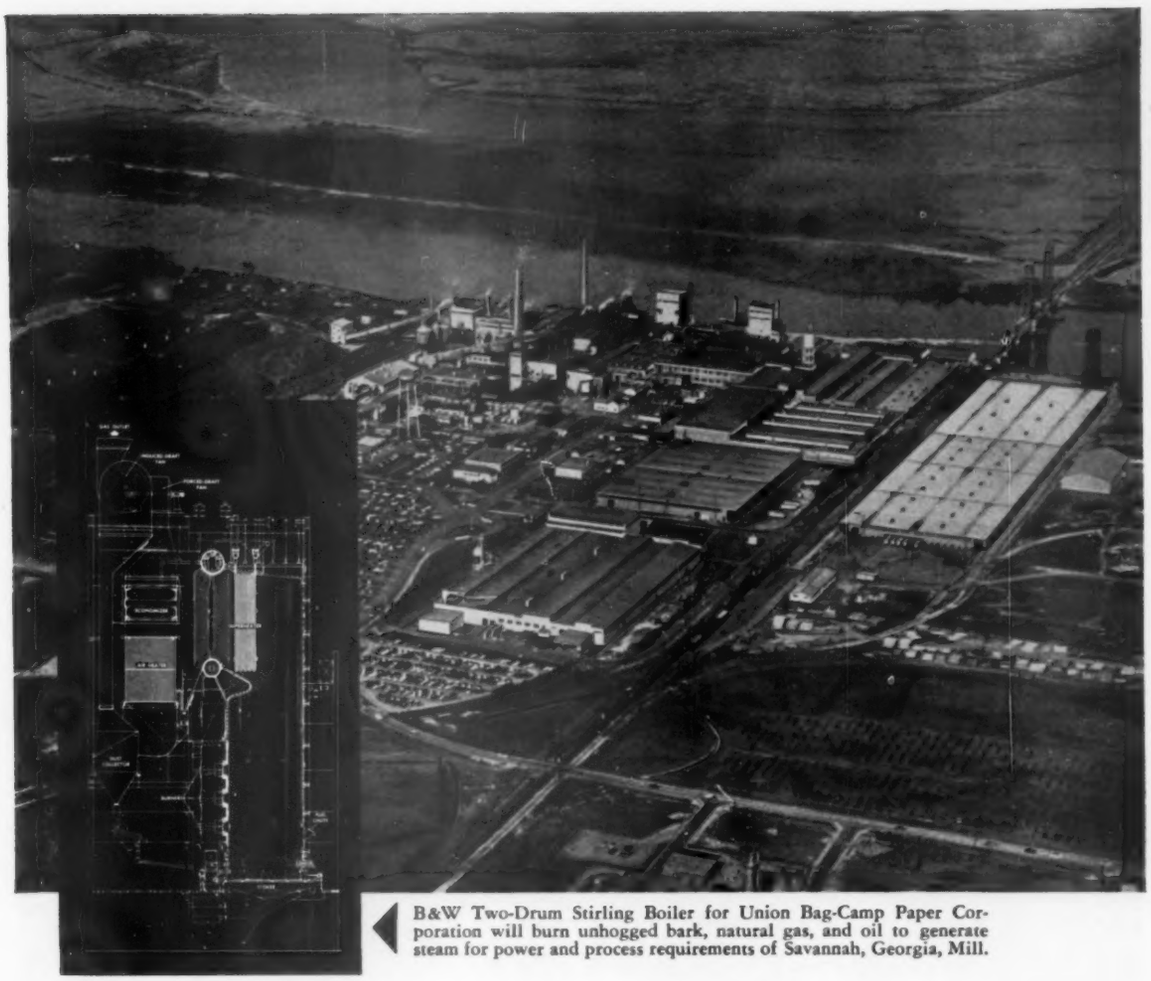
He has been with A-C nearly 40 years, many of them as application engineer in the centrifugal div., and is presently attached to the Industrial Systems dept. Mr. Forrest holds various patents on equipment for storing and handling paper stock.

Detcher

Herbert

Join Black-Clawson Co.

Appointment of **Theodore Detcher** and **William Herbert** to positions with Pandia Division, Black-Clawson, is announced by **Carl C. Landegger**, administrative vice-president. Mr. Detcher will serve as assistant sales manager and Mr. Herbert as assistant chief engineer for Pandia, manufacturers of the Black-Clawson line of pulp mill equipment. Mr. Herbert was former director of operations of Barrett Division, Allied Chemical & Dye Corp. and directed the Peoria, Dubuque and Sunbury pulp and board mills of that company. Mr. Detcher has had many years of experience in development of pulping processes with John W. Rouse Construction Co., Chemical Linings Inc., G. D. Jenssen Co. and Allied Chemical Corp.



B&W Two-Drum Stirling Boiler for Union Bag-Camp Paper Corporation will burn unhogged bark, natural gas, and oil to generate steam for power and process requirements of Savannah, Georgia, Mill.

Why America's Largest Bark-Burning Boiler is a B&W Boiler

The highest rated bark-burning boiler ever built will soon be generating 550,000 pounds of steam per hour at Union Bag-Camp Paper Corporation's huge mill at Savannah, Georgia. It will burn unhogged bark as a primary fuel but can also be fired with natural gas or oil—singly or in combination with the other fuels. The unit has a design pressure of 1250 psi at the superheater outlet and will operate at 950 F.

The designer and manufacturer? Babcock & Wilcox. Long associated with burning all kinds of fuel for steam generation, B&W has proved time and again its ability to supply dependable and efficient boilers of every size to burn every conceivable kind of fuel. And B&W's manufacturing capacity and know-how assure quick and dependable delivery schedules. That's why profit-minded steam users everywhere choose B&W to solve their fuel burning and steam generating problems.

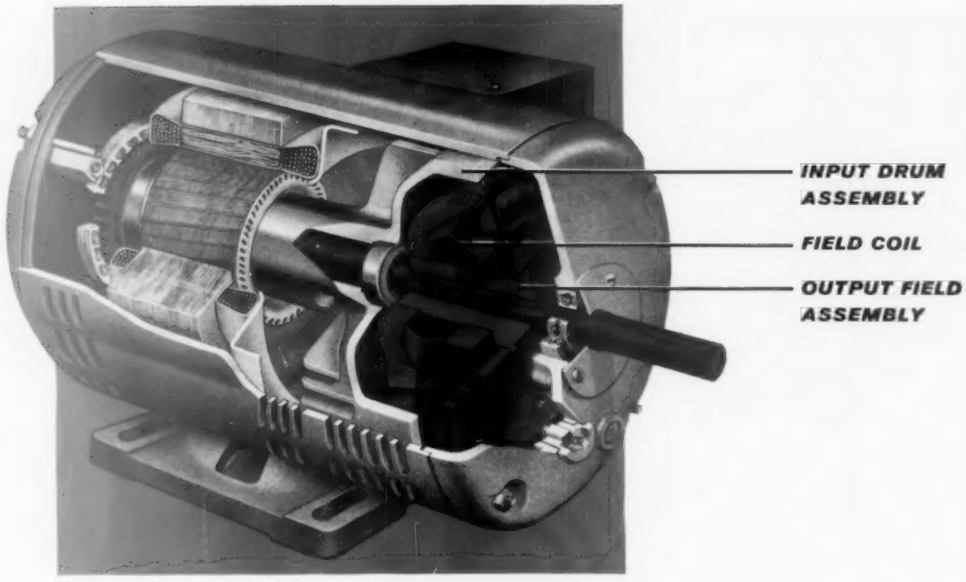
If you're looking for ways to increase boiler efficiency and achieve fuel economies that will increase your profits, your first step is a talk with B&W. Contact your local B&W sales engineer or write The Babcock & Wilcox Company, Boiler Division, Barberton, Ohio.

B&W

THE BABCOCK & WILCOX COMPANY

BOILER DIVISION

P-822



Get Stepless Adjustable Speed from AC Power

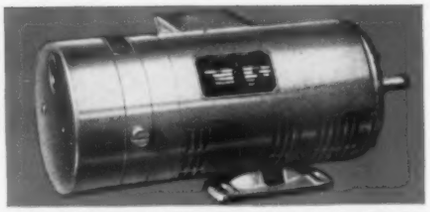
with DYNAMATIC Fractional HP Ajusto-Spede® Drives

Wherever infinite adjustment and accurate control of speeds are required, Eaton-Dynamatic Ajusto-Spede Drives offer a simple, low-cost solution to the problem—stepless adjustment from zero to full output speed, and accurate control of any speed within the speed range.

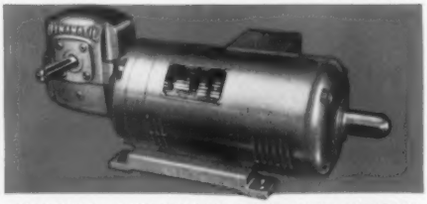
The Dynamatic Ajusto-Spede Drive is an integral combination of AC constant speed induction motor, eddy-current coupling, and plug-in type single-tube electronic control. Torque developed in the motor is transmitted to the driven member by electro-magnetic attraction; there is no mechanical contact between the driving and driven members.

Dynamatic Ajusto-Spede Drives operate on standard 115/230 volt, single phase, 60 cycle or 220/440 volt, 3 phase, 60 cycle alternating current—no special power source is required. Sizes are ¼, ½, and ¾ horsepower at 1600 RPM; ½, ¾, and 1 horsepower at 3200 RPM.

With standard, special, or remotely mounted transistorized control, Dynamatic Ajusto-Spede Drives offer many worthwhile advantages not found in other methods of speed control. Send for illustrated descriptive literature.



DYNAMATIC AJUSTO-SPEDE DRIVE WITH ELECTRICALLY OPERATED BRAKE. With the safety type friction brake, it is possible to achieve rapid deceleration and quick stop, thus providing fast cycling operation.



DYNAMATIC AJUSTO-SPEDE DRIVE WITH INTEGRAL SPEED REDUCER. Because of the variety of gear ratios available in the reducer, this compact assembly is adaptable to a wide range of slow speed applications.

EATON

DYNAMATIC DIVISION
MANUFACTURING COMPANY
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ORIGINATORS OF EDDY-CURRENT SPEED CONTROL EQUIPMENT

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Filter tests may be fine for cigarettes, but don't prove a thing about chains.

We can offer positive evidence of Rex Chain superiority: the *user* test. Any Rex user will tell you that Rex Chains, from log haul to finished lumber conveyor, give you more years of dependable service. All we have to offer is unmatched quality.

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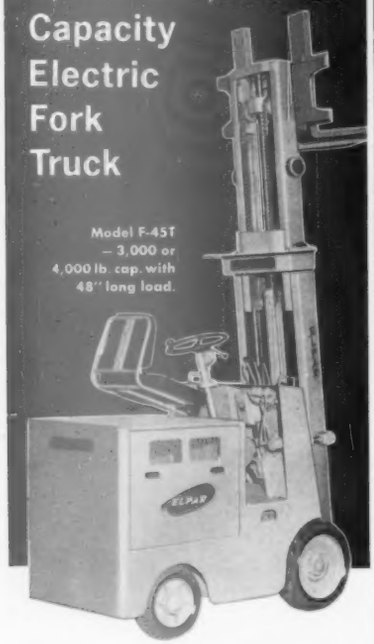
ELPAR

3,000 & 4,000 lb. Capacity Electric Fork Truck



PRICED TO FIT ANY BUDGET

The ELPAR F-45T is priced competitively yet offers the ultimate in quality that's traditional with all ELPAR electric trucks. Check these advantages:

- **Fast Travel and Lift**
- **Compact and Maneuverable**
- **Tough and Dependable**
- **Outstanding Safety**

And, it's economical. The F-45T operates on only pennies per day and is designed for fast, easy maintenance.

AVAILABLE FOR FAST DELIVERY

Write for your F-45T catalog today!

ELPAR

ELECTRIC TRUCKS

The ELWELL-PARKER Electric Company

4205 St. Clair Avenue • Cleveland 3, Ohio

In Canada: Industrial Equipment Co., Ltd.

Walter J. Kotchik, Coordinator of Sales & Service, Morden Machines

After two years with design and development dept., he moves into new position entailing customer services and preparing sales proposals of Morden stock preparation equipment. He was plant engr. for Oregon Steel Mills before joining the Morden firm.

Edward S. Barton Heads U.S. Office Of Sandwell International

Mr. Barton, vice pres., moves from Vancouver, B.C., to Sandwell's national office in Portland, Ore., now undergoing expansion. Other executives here include **M. R. Oberdorfer,** development engineer who has headed the staff since opening the office two years ago, and **D. F. Williamson,** chief engineer. About 75% of this large engineering management organization's business is in overseas countries.

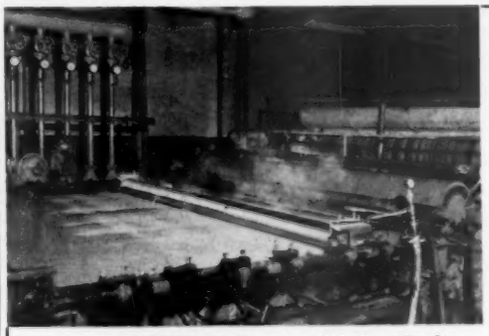
C. B. Sitterson, R&D Director, Appleton Woolen Mills

He joined the Appleton, Wis. felt manufacturer early in April as a member of the executive committee and director of research and development. He was formerly director of design in the Consumer Products div. of Kimberly-Clark Corp., Neenah. Prior to joining K-C, Mr. Sitterson was with the Institute of Paper Chemistry in administrative positions, serving five years as secretary. At Appleton Woolen he will supervise product improvements and new product development.

D. G. (Don) Ellis Named to Western Post by Stauffer

He is vice pres., western sales, in the Industrial Chemical div. Mr. Ellis continues as sales vice pres. of West End Chemical Co., Oakland, Cal., a division of Stauffer Chemical.

Roger Gunder, formerly western operations vice pres. for Stauffer, is transferred to New York, N.Y., where he is vice pres., Industrial Chemical div.



Increase Paper Production with DUPASQUIER DRIPLESS STEAM SHOWER BOX

- Preheats the Web U. S. patent 2,838,982.
- Changes Water Viscosity

THUS FREEING WET MAT

- Allowing Speed Increase

Custom Built for Any Machine
Write for Illustrated Folder

Canada Pat. 1955
Other pat. pdg.

J. H. DUPASQUIER

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Gladstone, Oregon

The seal test was a stopper...

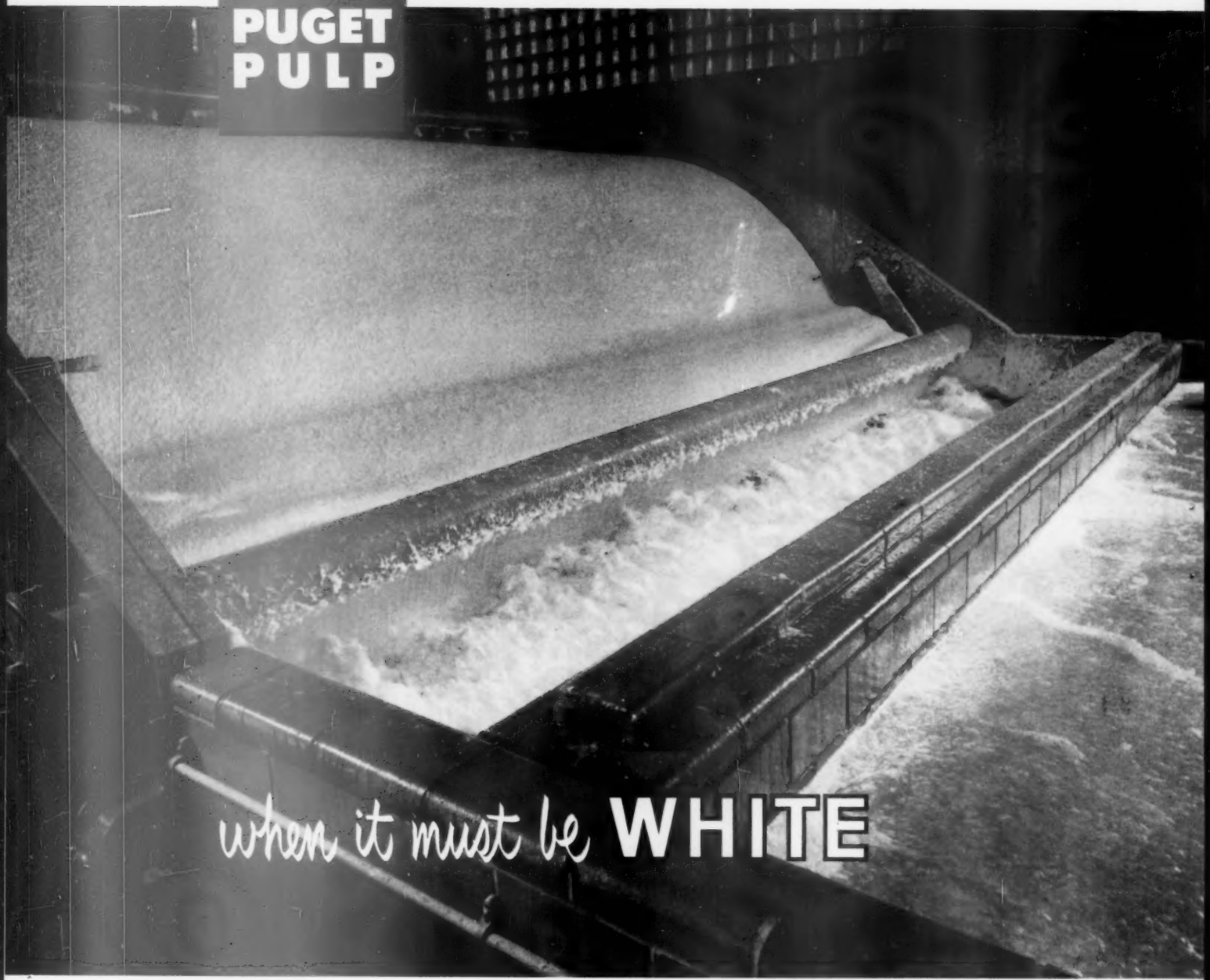
...in a lot of ways. Our tester wanted to stop the whole thing.

The test program proved that the seal in a Shafer Roller Bearing stops the entry of dust, dirt, abrasive particles. Nothing gets in...or out. Grease stays in for longest bearing life. And the seal is easily removable for bearing inspection without taking the bearing off the shaft. Ask your authorized Shafer-Rex Salesman, or write: CHAIN Belt Company, 4691 W. Greenfield Ave., Milwaukee 1, Wis. In Canada: CHAIN Belt (Canada) Ltd., 1181 Sheppard Ave. East, Toronto.

SHAFER®
REX®
CHAIN BELT COMPANY

SHAFER REX IS BEST...IN THE USER TEST

PUGET PULP



Final wash in Puget Pulp's bleach plant

start with PUGET PULP...
...the uniformly strong, clean, white
chlorine dioxide bleached
softwood sulphite

PUGET SOUND PULP & TIMBER CO.
BELLINGHAM • WASHINGTON

New Equipment Section

Glasteel Pipe

. . . Handled in the Field

Applications: For wide application in highly-corrosive services (all acids, except HF to 350°F and mild alkalies at moderate temperatures).
Advantages: F-C Glasteel piping (patent applied for) can be cut to required length in the field by plant maintenance crews. It is claimed to be ideal for those applications where freedom from product contamination or adhesion is required. Corrosion and abrasion resistance are approximately doubled because of the substantially thicker (⅛ in.) boro-silicate glass lining.
Specifications: F-C piping is rated at 150 psi and is available in 1½-, 2-, 3-in. diameters. It is currently available in limited quantities in conventional lengths through 10 ft.

Supplier: **Pfaudler Co., a division of Pfaudler Permutit Inc., Rochester 3, N.Y., U.S.A., Tel: BEverly 5-1000.**

Pulpwood Skid Grapple

. . . All-Weather Unit

Applications: To load and pile 8-ft. pulpwood in woods, mill loading and clean-up work.
Advantages: The two-prong 48-in. unit is available for mounting with the International Drott T-340 crawler tractor. When dumping, the operator releases the top arms and allows the wood to roll forward into place. The pry-over-shoe break-out action enables the skid-shoes to be used as a fulcrum and break logs loose from frozen piles. It is claimed that loads can be semi-skidded over the roughest woods with maximum control and operating visibility.
Specifications: Lower arms are pushed into the wood pile, while top grab-arms lower and clamp the load securely. The load is then rolled back and brought in close to the tractor to improve balance and facilitate transport. Maximum lifting capacity is 4,800 lbs. Loading height is 9 ft. 10 in., forward reach 7 ft. 4 in. Maximum tip-back at ground level is 33 degrees (In addition to the 48-in. grapple, a two-prong 28-in. unit is available for 4-ft. wood.)

Supplier: **International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill., Tel: ANdover 3-4200; and International Harvester Export Co., 180 N. Michigan Ave., Chicago 1, Ill., U.S.A.**

Paper Brightness Meter

. . . Recent Canadian Development

Applications: For laboratory brightness measurements.
Advantages: Only one light source and one photocell are used in the MEL 1251 and two light beams switched electromechanically and compared electronically to give an output indication directly in brightness units. Kamyr pressed sheets can be checked with consistent results. Instrument has been tested by one paper mill 24 hrs. per day for more than a year with consistently good results. Once calibrated, unit is said to maintain calibration for over a year; it can be operated by relatively unskilled personnel.
Specificatcns: The two light beams are (a) a controlled direct beam from light source to photocell and (b) light reflected from the paper sample and collected in an integrating sphere. Combination of filters is employed to provide a monochromatic light source at 457 millimicrons in accordance with TAPPI-T217m48 and T452m48. Paper sample inspected is slightly over 1-in. dia.

Supplier: **Meltronics Inc., 1010 N. Main St., Elkhart, Ind.**

Paper Knife

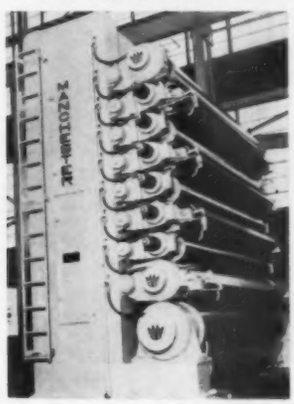
. . . 2-3 Times More Cuts

Applications: For all makes of cutters used in the paper industry.
Advantages: The Jet-Cut is said to deliver two to three times more cuts than ordinary knives, insure absolute hardness and give greater wear resistance. Dust and drag are virtually eliminated. A simple regrinding restores the precision cutting edge.

Supplier: **Ohio Knife Co., Dept. F99, Cincinnati 23, Ohio, Tel: KIrby 1623.**

Open-Side Calender

. . . Loading Applied to Any Roll

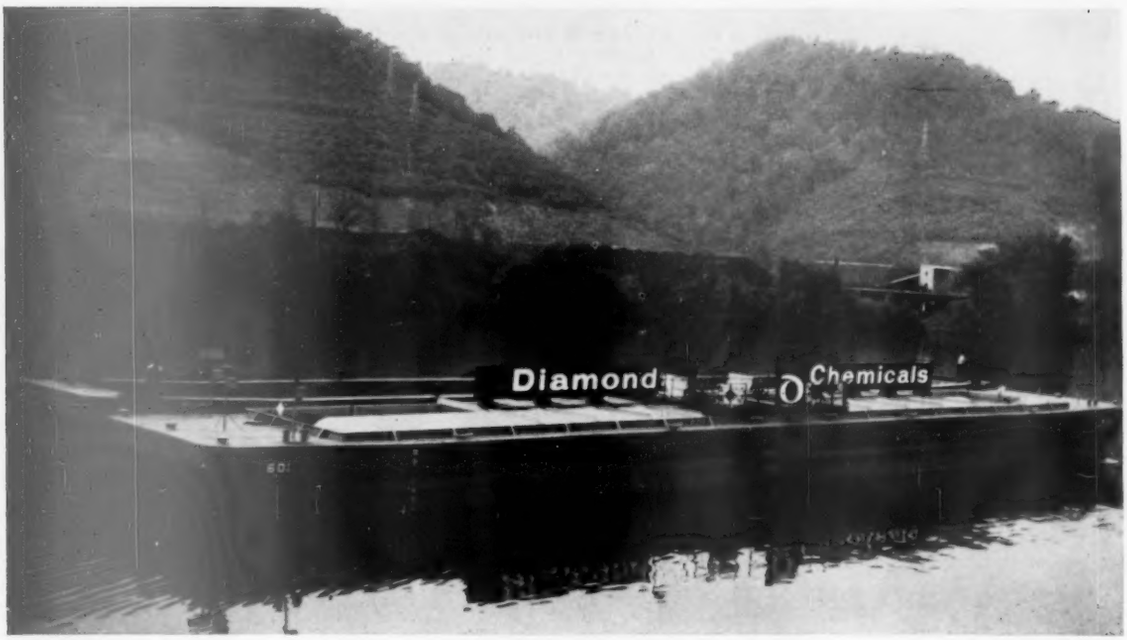


Applications: To smooth the web of paper as it passes between the nips.
Advantages: Loading can be applied to any roll in the stack on a selective basis. Says the manufacturer, "individual roll load control permits a mill to produce a smoother, more uniform finish on a wider range of fine papers." Precise pressure adjustments are provided by air-over-hydraulic system that uses only ordinary mill air pressure as a power source.
Specifications: Roll-loading, unloading and nip relieving are accomplished through levers in calender's all-steel frames. Master control provides fingertip control.

Supplier: **Manchester Machine Co., W. Central Ave., Middletown, Ohio, Tel: 2-3621.**

BY THE CYLINDER

BY THE BARGE



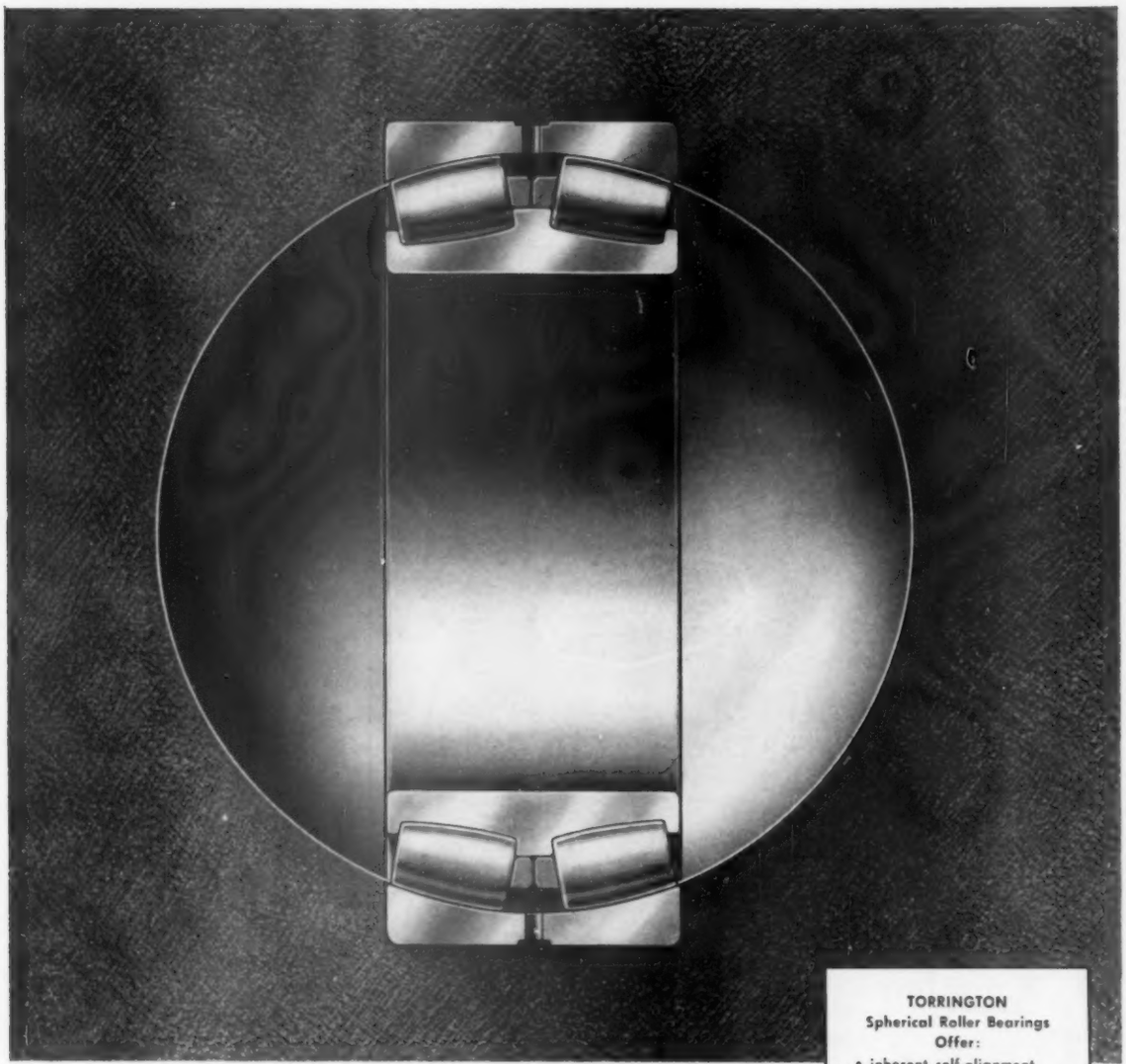
DIAMOND SHIPS LIQUID CHLORINE THE WAY YOU CAN USE IT BEST

If you're a big user of liquid chlorine and are on or adjacent to an inland waterway—Diamond can make deliveries by barge at the lowest possible cost.

Or, if you want it in 100- or 150-pound lots, Diamond ships special cylinders in those quantities, too. In between, there's a comprehensive and economical choice of ton containers and tank cars in any quantity by rail or truck.

Any way you get liquid chlorine from Diamond, you get maximum safeguards in handling, prompt service and the best of technical service. You'll be glad you're doing business with Diamond. Send for the Diamond "Chlorine Handbook." Write Diamond Alkali Company, 300 Union Commerce Building, Cleveland 14, Ohio.

Diamond Chemicals



IN TORRINGTON SPHERICALS . . . NO COMPROMISE WITH QUALITY

The spherical design concept of Torrington Spherical Roller Bearings means superior performance and outstanding service life under the toughest operating conditions. It means inherent self-alignment, high radial and thrust load capacity, low friction. It allows compensation *within* the bearing for both dynamic and static misalignment.

Roller guidance is positive and accurate . . . is assured by grinding roller ends and center guide flange surfaces to a common spherical radius. Results are truer rolling motion, minimum friction and higher degree of geometric stability. Bearing operation is cooler, quieter, smoother.

If you're looking for outstanding bearing performance and bearing *value*, you should specify Torrington Spherical Roller Bearings. Backed by Torrington's uncompromising experience in engineering and manufacturing every basic type of anti-friction bearing, their quality is unmatched.

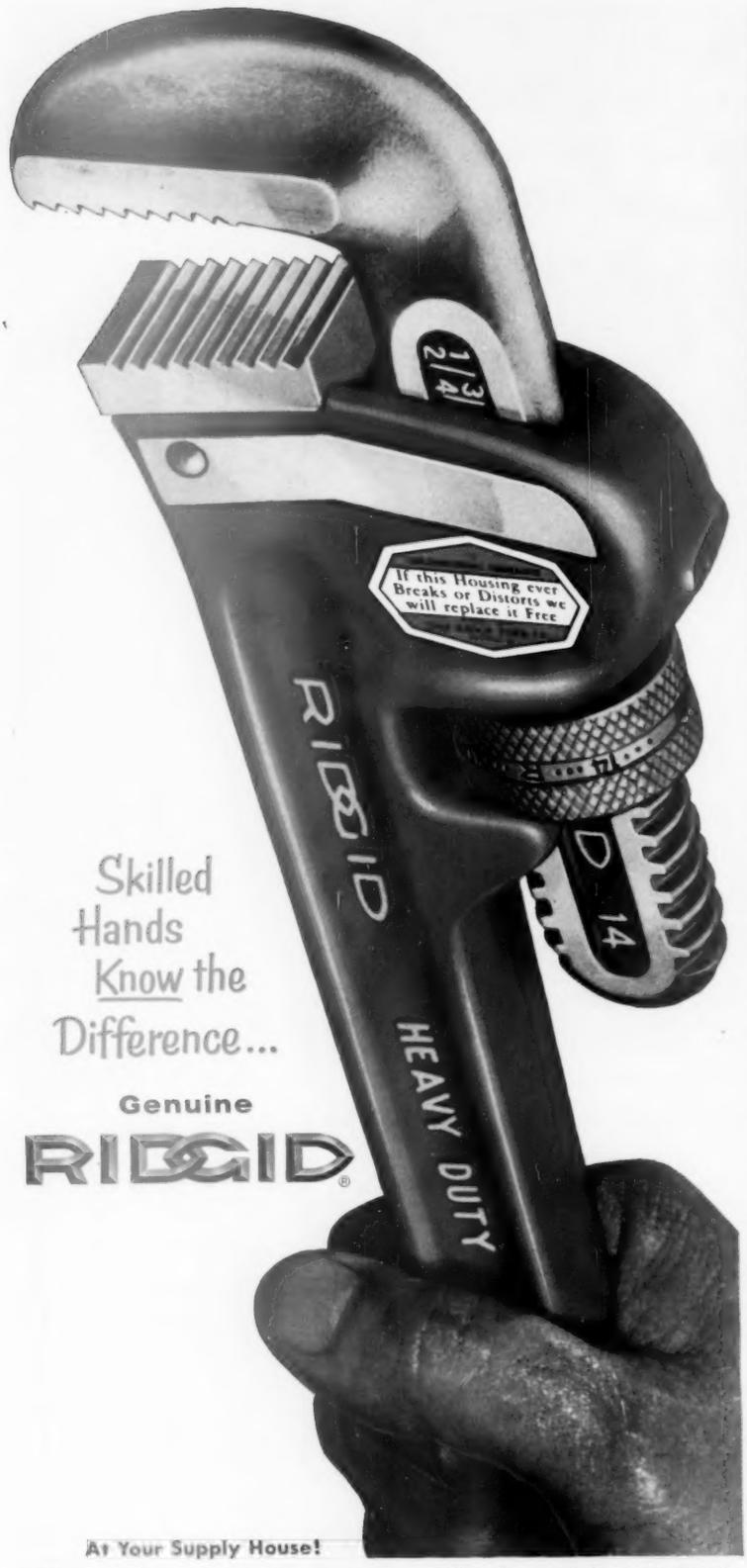
TORRINGTON
Spherical Roller Bearings
Offer:

- inherent self-alignment
- conformity of rollers to raceways
- integral center guide flange for stability
- positive roller guidance
- land-riding bronze cages
- maximum radial and thrust capacity
- controlled internal clearance
- electronically selected rollers
- even load distribution
- long, dependable service life

send for new Torrington Spherical Roller Bearing Catalog #258

progress through precision **TORRINGTON BEARINGS**

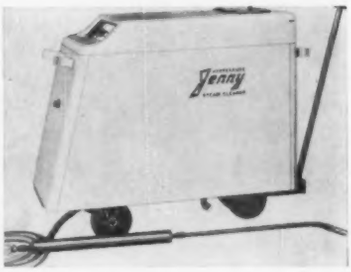
THE TORRINGTON COMPANY South Bend 21, Indiana • Torrington, Conn.



The Ridge Tool Company, Elyria, Ohio, U.S.A.

Steam Cleaner

. . . Light- to Medium-Duty

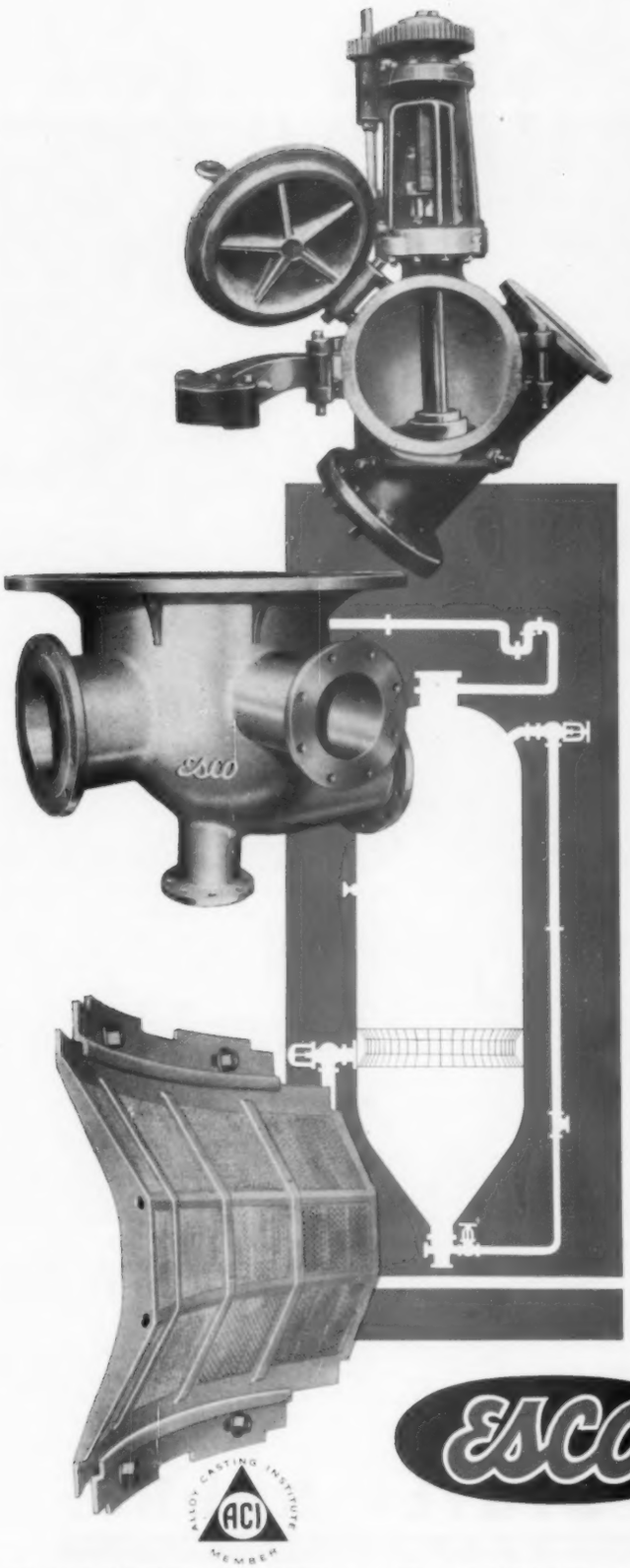


Applications: For cleaning or sanitizing in confined areas where fumes, smoke, flame or excess water would be objectionable or hazardous.
Advantages: The electrically-powered and electrically-heated steam cleaner is said to be ideal for the average light- to medium-duty cleaning job; also for a new process that "prevents flash rusting of machinery and equipment and imparts a like-new gloss to painted surfaces." The unit is ready to clean "90 seconds after pressing the motor switch, turning on the heaters and setting the solution metering valve to the desired concentration. . . ."
Specifications: The Model E-350 Jenny is offered for either 220- or 440-volt, three phase, 60-cycle a.c. electrical systems. It has 7½-in. rubber-tired wheels and drawbar for easy movement; weighs 375 lb., and measures approximately 48 x 24 x 38½ in.
Supplier: **Homestead Valve Mfg. Co., Coraopolis, Pa., AMherst 4-3240.**

Centrifugal Pumps

. . . New Models Added to Line

Applications: For light- and heavy-duty service in many industrial operations.
Advantages: With introduction of the new ¾-in. and 8-in. models, Worthington "now offers a complete size range in keeping with growing demand." The smaller unit gives industry a continuous-duty small pump for lower capacities that was not heretofore available. Application will include pilot plants and laboratories. . . . The 8-in. model is a twin volute pump with a stuffing box head so designed that a water jacket is an integral part, serving to either heat or cool the stuffing box area.
Specifications: The ¾-in. pump has a liquid end of corrosion-resistant metal and is available with either standard packed box or internal mechanical seal. It is offered in both frame-mounted and monobloc design.
Supplier: **Worthington Corp., Harrison, N. J., Tel: HUmbolt 4-1234.**



ESCO CIRCULATING SYSTEMS IMPROVE PULP QUALITY REDUCE OPERATING COSTS

...VERIFIED BY NEARLY 500 ESCO-ENGINEERED INSTALLATIONS

Wherever wood pulp is manufactured, *ESCO* circulating and indirect heating systems are known and used. Whether the cooking process is Kraft, soda, semi-chemical, calcium-base sulphite or soluble-base sulphite, *ESCO* systems improve product quality, increase production and lower operating costs.

Complete systems, tailored to your specific requirements, can be furnished by *ESCO*. *ESCO* has the pulp mill engineering experience and metallurgical know-how to make longer-lasting, more efficient strainers, bottom blow fittings, neck liners, shell insert fittings, valves, and pipe. All components are available in the steel alloys best suited for your operation.

Arrange today to have an ESCO representative call on you. Also ask for your free copy of ESCO's Custom Alloy Steel Castings brochure.

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ELECTRIC STEEL FOUNDRY COMPANY

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MFG. PLANTS AT PORTLAND, ORE. & DANVILLE, ILL. • Offices in Most Principal Cities • ESCO INTERNATIONAL, NEW YORK, N.Y. • IN CANADA ESCO LIMITED

US RUBBER CONVEYOR BELTS

Note the perfection of training and troughing shown in this photograph.

Marathon-Southern's new mill is 100% equipped with "U. S." Conveyor Belts

United States Rubber literally has the run of the mill in the Marathon-Southern Corp.* mammoth unit at Naheola, Alabama. "U.S." Conveyor Belts are used as follows:

*Two U.S. Matchless® Conveyor Belts for log sorting.
*Two U.S. Matchless Conveyor Belts for use as chipper feed log belts.
*Six U.S. Oil-resistant Conveyor Belts (two running from chip conveyors to screens, two running from chip conveyors to silos and two more running from silos to chip conveyors).
*One U.S. Oil-resistant Conveyor Belt used as a digester feed chip conveyor.
*One Oil-resistant belt used as screen rejects conveyor.
*One Oil-resistant belt used as purchased chip conveyor.
*U.S. Giant Conveyor Belt used as refuse conveyor to boiler.
*Special Tan Natural Rubber Covered Belt used as stock conveyor from washer.
*Special Tan Natural Rubber Covered Belt used as stock conveyor to MD storage.
*U.S. Giant Conveyor Belt carrying coal to crusher house.
*U.S. Giant Conveyor Coal Stacker Belt.
*U.S. Giant Conveyor Belt carrying coal from crusher house to boiler.
*U.S. Giant Conveyor Belt used on coal reclaim feeder.

Marathon-Southern's selection of "U.S." Belts *exclusively* is due to their long-established record of low-cost haulage, durability and freedom from maintenance. This is another mill in which "U.S." demonstrates the kind of performance that has made it the foremost authority in belting.

The most comprehensive belting engineering information is available through your "U. S." Distributor. It will pay you to check with him.

US RUBBER Mechanical Goods Division

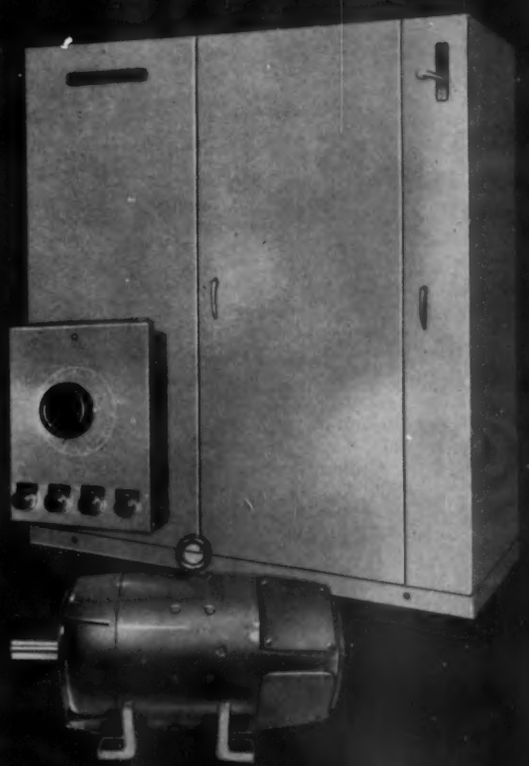
United States Rubber

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y. In Canada: Dominion Rubber Company, Ltd.

static-powered or motor-generator

Static-Powered model utilizes magnetic amplifier principle to replace conventional motor-generator set. There are no moving parts to weaken from wear. New forced-filtered air ventilation system reduces floor space required . . . simplifies installation.



Motor-Generator model, newly redesigned, features new cabinet, silicone-insulated d-c motor, new electronic regulators which simplify maintenance and positive-pressure ventilation for longer, trouble-free operating life.

WESTINGHOUSE HAS THE ADJUSTABLE-SPEED DRIVE YOU NEED!

When you need smooth, stepless adjustable speed, look to the complete line of new Westinghouse AV adjustable-speed drives . . . available in both static-powered and motor-generator models . . . whichever is best suited for your particular application.

Designed for use with motors 1 to 200 hp, Westinghouse AV adjustable-speed drives provide constant torque over an 8 to 1 speed range—10 to 1 with slight modification—and are also available with constant-hp speed ranges.

All Westinghouse AV adjustable-speed drives are completely pre-engineered, assembled and factory tested. Since all components used are service-proven Westinghouse products, you are assured of the benefits of sole responsibility from one single supplier.

Ask your nearby Westinghouse sales engineer to show you how and where new AV adjustable-speed drives can help you POWER-UP for profit and savings. Or, for complete product information, write Westinghouse Electric Corporation, 3 Gateway Center, Pittsburgh 19, Pennsylvania. J-22147

YOU CAN BE SURE... IF IT'S Westinghouse

TUNE IN WESTINGHOUSE-CBS TV-RADIO COVERAGE, PRESIDENTIAL CONVENTIONS, JULY 10-29

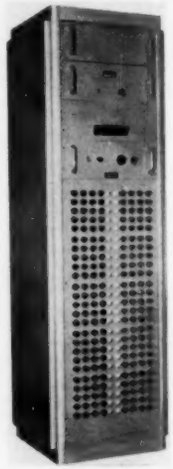
NEW EQUIPMENT

Butterfly Valve
. . . Saves Space, Weight, Cost

Applications: For flow applications where positive, drop-tight shut-off and/or resistance to corrosion are important requisites.
Advantages: Valve is much smaller and weighs but a small fraction of standard gate valve. Disc travels from full open to full closed in a quarter of a revolution. There are no metal surfaces to corrode or bind. Straight-through flow is made possibly by the shape of the disc. There are no voids or cavities to cause eddy currents or fouling with foreign matter. Valve operating mechanism is secured to the shaft by a shear pin that will fail should a large obstruction render the valve inoperable.
Specifications: Valve components are available in any desired combination of metals. Available sizes range from 2- to 36-in., in both 50- and 150-lb. pressure ratings. Solid-cast disc is externally ribbed and shaped to provide strength and rigidity needed at high differential line pressures. It is taper-pinned to an oversized through shaft of full diameter throughout its entire length. Assembly is designed for highest rated pressure with ample safety factor.

Supplier: **W. S. Rockwell Co., 200 Elliott St., Fairfield, Conn.**

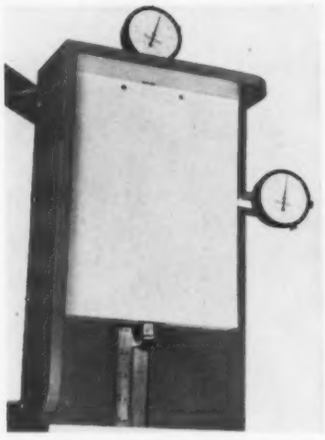
Draw and Speed Indicators
. . . Required Accuracy to 0.1%



Applications: These transistorized digital units are designed to assure consistent paper quality and prevent paper breakage.
Advantages: Highly-skilled operators are not required as there are no operating adjustments. Equipment is designed to operate 24 hours a day under conditions of high temperature and humidity.
Specifications: Instruments provide numerical indication of percentage of positive draw or roll speed (or both) to any required accuracy—usually 0.1%. Draw indicator operates with remote readout indicators located at as many as 25 roll positions in the mill. Operator presses push buttons to read draw or speed; when incorrect percentage is observed, correction is made by adjusting speed of drive rolls. Main instrument and remote indicators read directly in illuminated numerals visible at up to 50 ft. Magnetic pick-ups or Rotopulser sensing devices detect precise roll speed at each location. Adjustment switch compensates for varying roll diameters.

Supplier: **Dynapar Corp., 7312 North Ridgeway Ave., Skokie, Ill., Tel: ORchard 4-6655.**

Paper Size Gauge
. . . Off-Size Cuts Registered



Applications: To ascertain whether paper is true in size and cut.
Advantages: When accurately-cut paper is placed on bed plate, dial indicators read "zero". Any off-size cut (either in width or square) will immediately register plus or minus. Absolutely true checking surface is assured.
Specifications: Left-hand indicator checks cut for square; top indicator for width, movable slide for length. Scale imbedded in bed plate flush with surface. Overall dimensions of the Murco are: 18 in. long, 10 in. deep, 12 in. high. Checking table is inclined to 45°. It is adjustable for length from a 7½-in. minimum to 15-in. maximum. Larger or smaller units are available.

Supplier: **D. J. Murray Mfg. Co., 1002-1024 Third St., Wausau, Wis., U.S.A.**

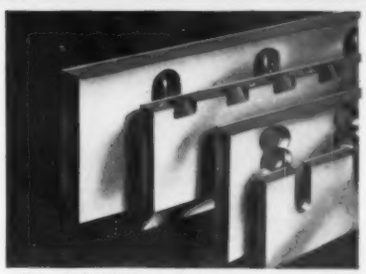
Knox Felts KNOX WOOLEN COMPANY

CAMDEN, MAINE

America's First Manufacturer of Endless Paper Machine Felts

Now there's an all-new member of the Simonds family of knives, saws and files—the brand-new Simonds "Si-Namic" paper knife. Here's a knife that incorporates a brand-new steel mix — developed and produced in Simonds own Steel Mill — and a new finish. Combined, they offer you the sharpest, smoothest, longest lasting cutting edge available — and at competitive prices.

Add to this Simonds dependable chipper knives and circular cutters and you can see why, more than ever, your Simonds Industrial Supply Distributor is your number one source of supply for dependable cutting tools.



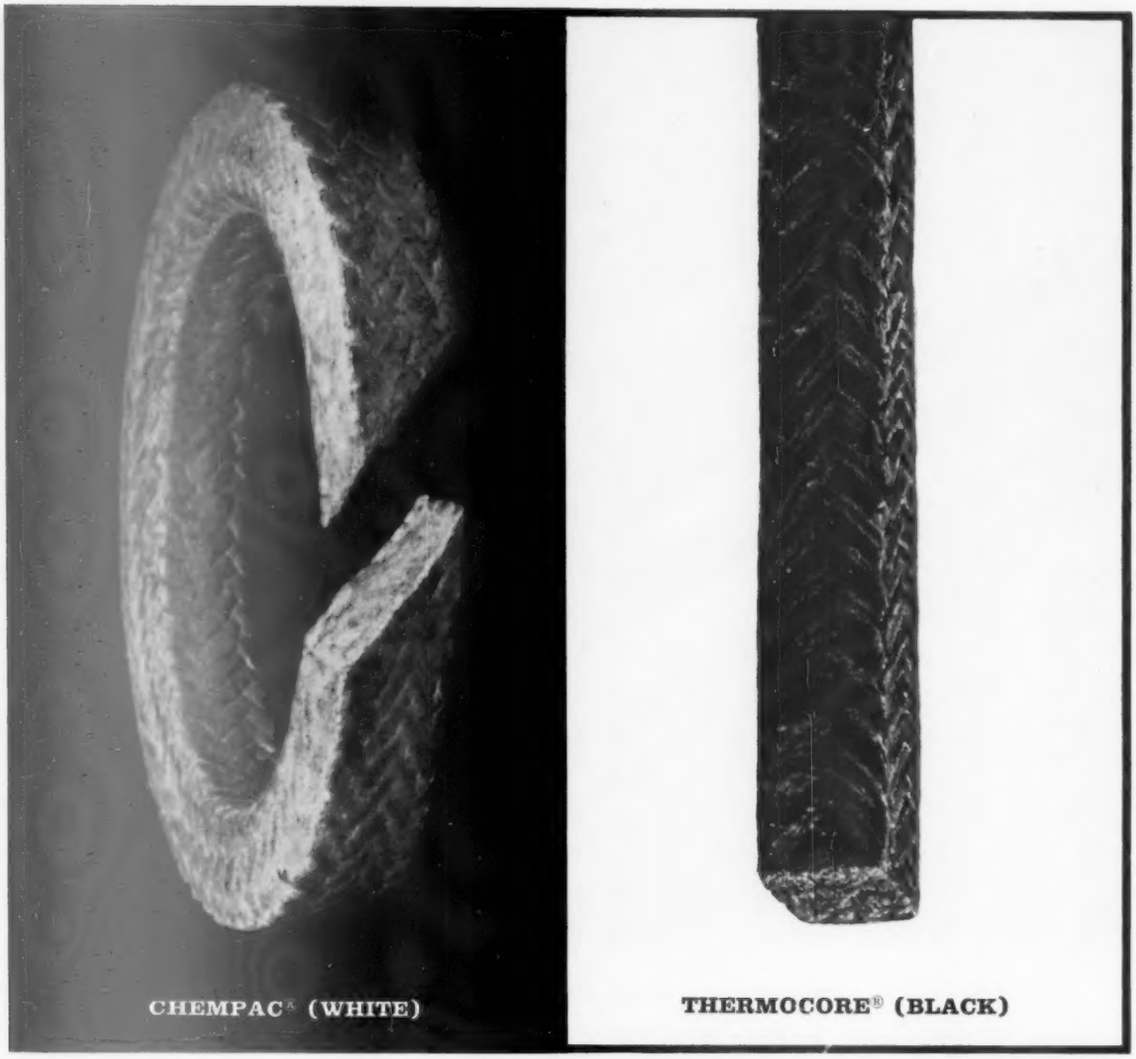
Simonds T-18 chipper knives are extra tough for giving you more heavy cuts at high speed, for more usable chips and less waste dust.

Whether it's the thinnest tissue or thickest board, Simonds circular cutter, slitters and perforators cut smoothly, easily, truly. There's no better value for your cutter dollar.

Your nearby SIMONDS DISTRIBUTOR is your most dependable cutting tool supply source. His stocks and services are designed with your convenience and economy in mind. Call him FIRST for all your industrial supply needs!

SIMONDS
SAW AND STEEL CO.
FITCHBURG, MASSACHUSETTS

Factory Branches in Boston, Chicago, Shreveport, La., San Francisco and Portland, Oregon
Canadian Factory in Montreal, Que., Simonds Divisions: Simonds Steel Mill, Lockport, N. Y.
Heller Tool Co., Newcomerstown, Ohio, Simonds Abrasive Co., Phila., Pa., and Arvida, Que., Canada



Now—just two J-M styles will handle 9 out of 10 mechanical packing problems!

LET VERSATILE "BLACK" OR "WHITE" HELP YOU REDUCE PACKINGS INVENTORY

Of Johns-Manville's many packing styles, two stand out as "all-purpose" packings. One is for pumps, the other for valves. These two packings not only do an outstanding sealing job . . . they also simplify your packings inventory investment to a minimum.

In 9 out of 10 cases, CHEMPAC and THERMOCORE will handle any pump or valve job in your plant!

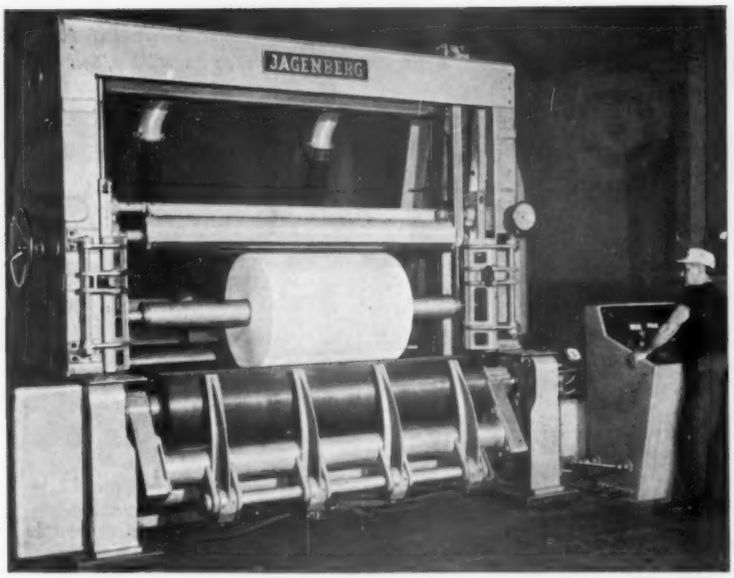
CHEMPAC (white) combines the excellent sealing and heat-resistant qualities of asbestos . . . with Teflon's immunity to almost all chemical and solvent action. Chempac Style 2009 will give outstanding service on pumps, expansion joints and agitators.

THERMOCORE (black) consists of asbestos yarns, reinforced with Inconel wire . . . braided over a plastic core of graphite and 100% white asbestos. It remains stable even in valves where line temperatures run as high as 1200 F . . . adapts readily to eccentric motion. Thermocore Style 397 is recommended as the "universal" valve packing.

Johns-Manville produces the industry's most complete range of packing styles. These are described in a new 64-page Mechanical Packings book—the most complete of its kind. In its handy pages, you will find answers to the correct selection of packings best suited to each particular requirement.

For full information on "WHITE" and "BLACK," see your J-M Distributor . . . or write to Johns-Manville, Box 14, New York 16, N. Y. In Canada: Port Credit, Ont.

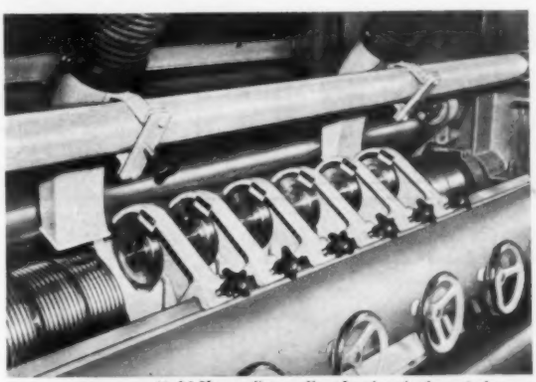
JOHNS-MANVILLE JM PRODUCTS



Model 30 operating at Westvaco's Tyrone Mill, rewinding and slitting narrow rolls.

why WESTVACO bought the JAGENBERG Pneumatic Winder...

J. Lynne Ferner, Manager of the Tyrone-Williamsburg Division says: "Our mill at Tyrone, Pa., is in the fine papers business and we're constantly on the alert for new equipment and processes which will contribute to greater operating efficiency and improved quality. We installed a Jagenberg pneumatic winder at Tyrone after one of our engineers had had an opportunity to study its performance in commercial operation in Germany. The equipment is doing a good job of producing well-wound narrow rolls, principally for the envelope trade."



Multi-Shear slitters directly ahead of rewind, produce sharp, clean cuts.

JAGENBERG Available in three different Models, 60" to 160" wide, the JAGENBERG Pneumatic Winder can be installed behind the Paper Machine or off the Machine. Its special features include the "Multi-Shear" slitting system, a unique type of rewind shaft guide, driven fly rolls and a built-in roll lowering device. Pneumatic operation throughout. Speeds up to 4,000 fpm. Precision engineered by JAGENBERG, world's largest manufacturers of paper finishing equipment. Contact our representatives for full details.

Finished rolls separate easily, have clean straight sides.

JAGENBERG WERKE • Düsseldorf • Germany

Distributor in the United States

AMERICAN PAPER AND PULP CO., INC. 300 PARK AVENUE SOUTH, NEW YORK 10, N.Y.

In Canada: JAGENBERG OF CANADA LTD., 209 Davenport Road, Toronto 5, Ont.

PAPER CONDITIONING

THE MODERN EFFICIENT ECONOMICAL WAY

■ VAPO SYSTEMS method of conditioning paper is the time-proven method of properly and uniformly adding the desired moisture content to your sheet. VAPO SYSTEMS units are proven spraying surface materials as Starch, Casein, Wax, Clay, etc. Mills report that Vapo Systems paid for themselves in less than a year. ASK ABOUT IT.

**Photo shows one of several installations in a large mill.*

WRITE FOR FACTUAL DATA

VAPO SYSTEMS
136 Home Ave.
Villa Park, Ill.

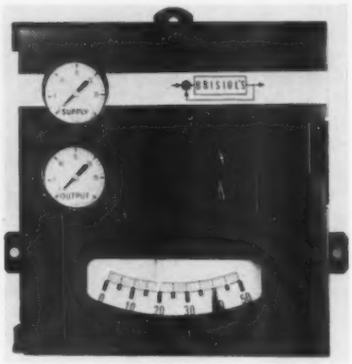
NEW EQUIPMENT

Axe Splitter
. . . Fast Operation Claimed

Applications: For splitting blocks and logs to chipper size.
Advantages: Unit is operated by quick-opening poppet type control valves mounted on each end of the cylinder, thus giving fast action and positive axe control; when closed, valves prevent loss of steam or air. Axe can be stopped in any position forward or reverse.
Specifications: Air or steam operation available. Blocks up to 4 in. long can be split. Poppet valves controlled by finger-tip lever through solenoid valves. Cylinder sizes are offered from 12- to 18-in. bore.

Supplier: **Sumner Iron Works, P. O. Box 1006, Everett, Wash., U.S.A., Tel: CEdar 2121.**

Indicating Pneumatic Controller
. . . Features Simplicity, Stability



Applications: For high control stability and close process control.
Advantages: Units feature simple modular design for ease of servicing. Control unit is as easy to remove, exchange and replace as any plug-in type unit.
Specifications: Units are available in models for proportional control with 1 to 400% proportional band, and reset control with 0.1 to 50 repeats per min. reset rate. They are offered for control of pressure (full vacuum to 10,000 psi), temperature (−100°F to 1,000°F), flow and differential

HANCHETT KNIFE GRINDERS

MODEL DN LOW PRICED

GUARANTEED PERFORMANCE

Capacity: 32" to 108"
Wheels: 10" to 14" Dia.
Table Drive — Timing Belt with Elec. Reversing Motor
Motor — 3 H.P.

Delivers the finest in knife Edges and high production at low cost

DEALER INQUIRIES INVITED

MODEL GK
HEAVY DUTY

Capacity: 32" to 196"
Wheels: 14"—16"—20" Dia.
Motors: 3 to 15 Horsepower
Table Drives: Mechanical—Electric—Hydraulic
Precision Built—accurate—rugged and quiet

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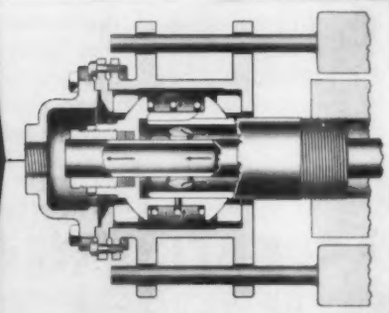
Main Office: BIG RAPIDS, MICHIGAN
West Coast: PORTLAND 1, OREGON

For High Speed Paper Machines with Revolving Syphon Pipes

In the Type LN Johnson Joints the revolving syphon pipe is made a part of the rotating assembly, yet is permitted longitudinal movement. Sealing is still accomplished without packing. Simple support rods carry all the weight of joint and connections, permit the rotating assembly to "float" freely inside. Special hangers and brackets adapt the mounting for machines with either open or enclosed gearing.

Johnson Joints fit all needs on paper machines, calenders, corrugators, waxers, embossers, roofing machines, printing presses. For full data on Type LN write for Bulletin N-2002.

Type LN *Johnson* ROTARY PRESSURE *Joints*
"First in the paper industry"



THE JOHNSON CORPORATION
849 Wood St., Three Rivers, Michigan

HOW YARWAY BLOW-VALVES REDUCE DIGESTER OPERATING COSTS

Faster blow

Valve by valve comparisons show Yarway Seatless have up to 100% greater discharge area than some other digester blow valves of the same nominal pipe size. Result—faster discharge, lower pressure drop.

Cleaner blow

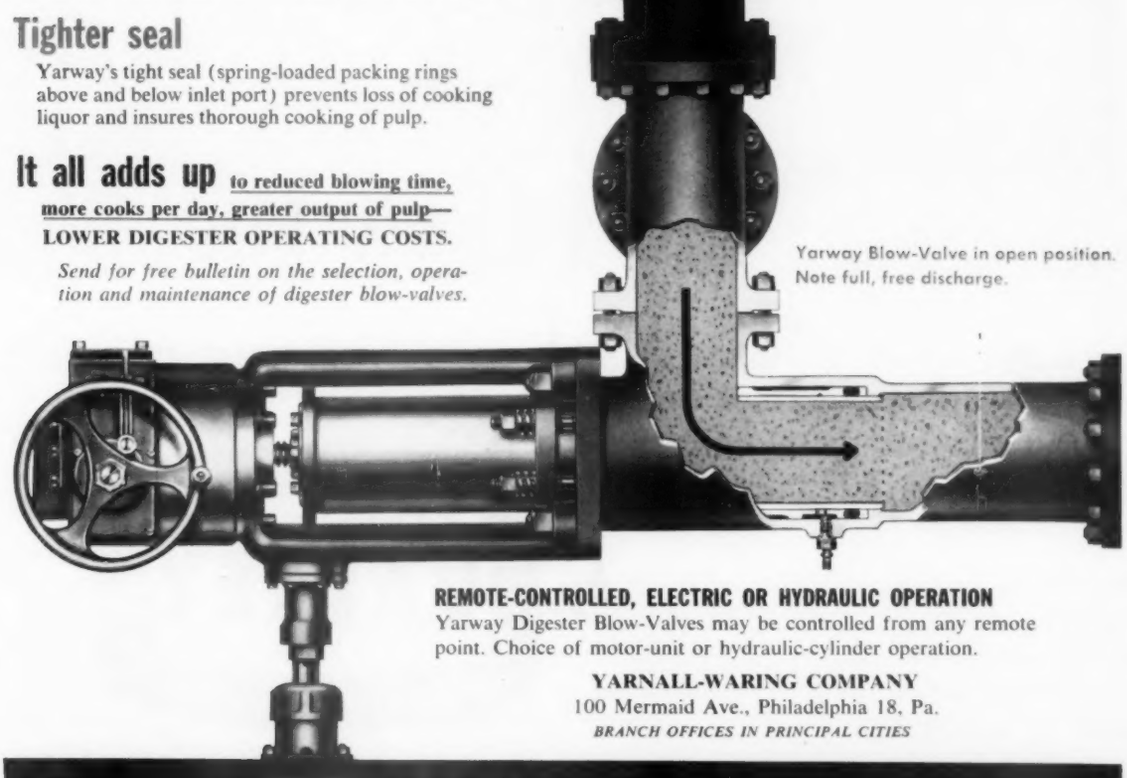
Steam purging is unnecessary since Yarway's seatless hollow-sliding-plunger design eliminates all pockets where wood chips or tramp metal can hang up.

Tighter seal

Yarway's tight seal (spring-loaded packing rings above and below inlet port) prevents loss of cooking liquor and insures thorough cooking of pulp.

It all adds up to reduced blowing time, more cooks per day, greater output of pulp—
LOWER DIGESTER OPERATING COSTS.

Send for free bulletin on the selection, operation and maintenance of digester blow-valves.



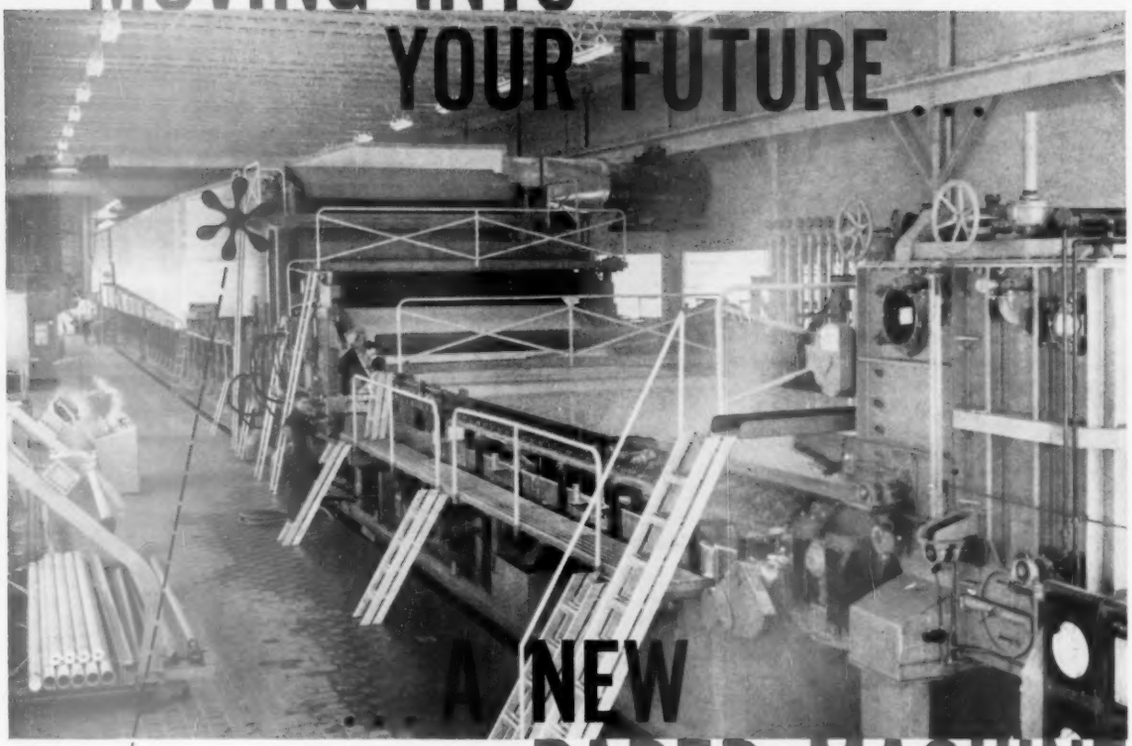
Yarway Blow-Valve in open position. Note full, free discharge.

REMOTE-CONTROLLED, ELECTRIC OR HYDRAULIC OPERATION
Yarway Digester Blow-Valves may be controlled from any remote point. Choice of motor-unit or hydraulic-cylinder operation.

YARNALL-WARING COMPANY
100 Mermaid Ave., Philadelphia 18, Pa.
BRANCH OFFICES IN PRINCIPAL CITIES

YARWAY DIGESTER BLOW-VALVES

MOVING INTO YOUR FUTURE . . .



. . . A NEW PAPER MACHINE

* NICOLET PAPER COMPANY'S NEW 160" NO. 3 MACHINE

by... VALLEY

VALLEY IRON WORKS CORPORATION
SUBSIDIARY OF ALLIS-CHALMERS MANUFACTURING COMPANY
APPLETON, WISCONSIN
West Coast Representative: E. A. Berry, P.O. Box 958, Longview, Washington
Canadian Representative: Pulp and Paper Mill Association Ltd., P.O. Box 850, Station "O", Montreal 9, Quebec

B.C. Forest Service Photo

PROMISE HIGH QUALITY BLEACHED PAPER PULP IN 1961

Early in 1961, a new high quality market pulp mill will go on stream near Castlegar, British Columbia, at the foot of the Arrow Lakes region of the Columbia River. Celgar Limited will utilize almost 900,000 acres of prime northern-type forest lands held under a Tree Farm Licence in perpetuity.

All the resources necessary for efficient mill operation are available — wood to meet any future demand, plentiful water from the clear Columbia, power and gas, transportation from the mill site to markets, and trained people from established industrial communities in the area.

Celgar Kraft will combine many of the best qualities of Northern and Western pulps to produce a product with an exceptional balance of properties. The long, tough fibres from high-density softwoods develop high bursting strengths coupled with outstanding tear resistance over a wide range of freeness, and in a variety of stock preparation equipment.

COLUMBIA PULP SALES LIMITED has been formed to distribute Celgar Kraft pulps and Columbia Cellulose sulphite pulps. Offices are located at:
1030 West Georgia St., Vancouver 5, B.C.
1600 Dorchester St. West, Montreal 25, P.Q.

V4247-1

Celgar Kraft

pressure (both mercury and dry-type meter bodies), humidity (0 to 100% RH) and differential liquid level; they are equipped with standard Bristol precision measuring elements. Unit is small (8 × 8 × 5 in.) and housed in a weatherproof aluminum case designed for flush, surface, panel, pipe or valve mounting. Frequency response curve is essentially flat to 400 CPM (proportional) and 325 CPM (proportional plus reset). Instrument is said to have excellent ambient temperature stability (less than 0.1% change in output pressure for 90°F temperature change).

Supplier: **Bristol Co., 142 Bristol Rd., Waterbury 20, Conn., Tel: PLaza 6-4451.**

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*Teletype Service. For immediate confirmation of reservations at no charge . . telephone any Knott Hotel -or teletype PG-29.

Chip Handling Via Kewanee Hydraulic Truck Dumpers

A recently installed 50 x 10 ft. Kewanee Hydraulic Truck Dumper in the act of unloading a large tractor-trailer load of wood chips at a pulp mill in Florida. Platform tilts to 50° by means of powerful hydraulic cylinders which are actuated by a push button power unit. The dumper shown is a pit-less, non-scale type. Can also be equipped for pit operation and may include scales to weigh incoming loads of chips. Dumpers of 50 and 60 ft. lengths are manufactured by the Kewanee division of Screw Conveyor Corp., Hammond, Indiana, for wood chips. These accommodate the largest tractor-trailer combinations. Safety features for dumpers are axle hold down devices, wheel guide angles, dual wheel stops which permit positioning of the vehicles properly over the platform to avoid damage to truck bumpers and the steel pits.

Centrifugal Cleaner
. . . Small Space Required

Applications: For removing trash and rubble from furnish.

Advantages: This large-capacity unit may be used ahead of the screens or high-pressure drop cleaners or in stock preparation systems at the pulpers. The low pressure drop Precleaner boasts small space requirement, no moving parts and low pump head requirements.

Specifications: Three sizes available to handle volumes from 1,500 to 6,000 gpm with a single unit. Construction is either in mild or stainless steel; manually-operated valves or push button control.

Supplier: **Nichols Engineering & Research Corp., 70 Pine St., New York 5, N.Y., U.S.A., Tel: WHitehall 3-5520.**

Meeting Dates

June 7-8
Waste Paper Symposium (Waste Paper Utilization Council)
Conrad Hilton Hotel, Chicago

June 7-9
National PIMA Annual Convention
St. Francis Hotel, San Francisco, Cal.

June 14-16
TAPPI Bleaching Conference
Edgewater Beach Hotel, Chicago

August 24-26
TAPPI Forest Bilogy Symposium
New Washington Hotel, Seattle, Wash.

Sept. 6 to 9
Summer Meeting, Tech. Section, Canadian Pulp & Paper Assn.
Banff Springs Hotel, Banff, Alberta.

September 18-21
National Paper Trade Assn. Semi-Annual Fall Meeting
Conrad Hilton, Chicago

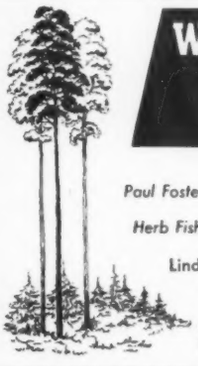
October 10-13
10th TAPPI Corrugated Containers Conference
Royal York Hotel, Toronto

OVERLY'S INCORPORATED

BOX 468
NEENAH WIS.

HEAD BOXES

STAINLESS STEEL
CUSTOM FABRICATED and DESIGNED



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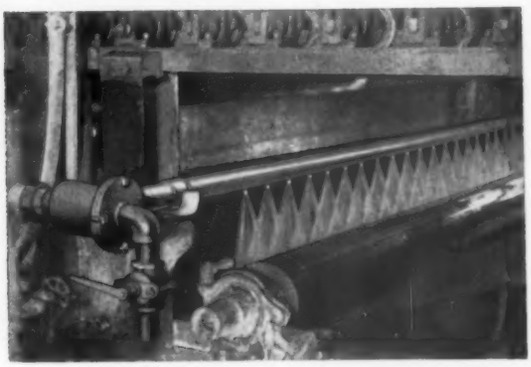
Mount Vernon Dryer Felts
Carrier Rope, Splicing Tissues, Deckle Webbing, Apron Cloth, Wire Brushes

..IRREPLACEABLE
.....REPLACEABLE



DeZURIK SHOWERS are BOTH!

As a unit, DeZurik showers are *irreplaceable!* They deliver a direct, fan-shaped spray of high velocity that cleans more effectively with less water. Large orifices and the elimination of sharp corners retard clogging—even when white water is used.

Individually, DeZurik stainless steel Shower Nozzles are *replaceable,* providing the equivalent of a new shower at a fraction of the cost.

On cylinder molds, wires, felts, flow-boxes, screens, washers, save-alls—wherever forceful, uniform, efficient showering is demanded, specify DeZurik!

DeZURIK CLEANABLE TRIM SQUIRTS

completely eliminate "down time" to clean or replace a clogged squirt. They clean instantly—right on the job! A quick press on the plunger, a stainless steel needle cleans the orifice and springs back! No loss of production, less broke, more paper on the reel!

Write for more information

DeZURIK CORPORATION
SARTELL, MINNESOTA

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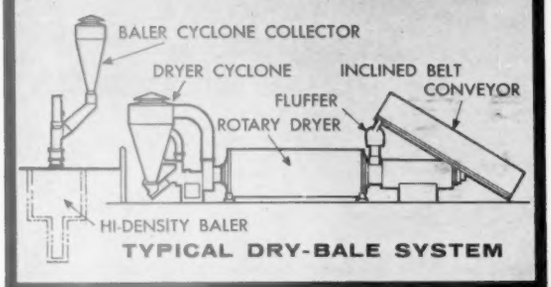
Vacuum and Consumable Electrode Melted steels



TYPICAL DRY-BALE SYSTEM

Halifax Power & Pulp Ltd.

dries groundwood pulp to 90% air-dry

Halifax Power & Pulp Ltd., using the Dry-Bale system, is now drying groundwood pulp at Sheet Harbor, Nova Scotia. The new system reduces shipping costs . . . saves storage space . . . permits pulp to be shipped to distant markets. The pulp is readily dispersible, requires less handling, and can be stored in warm climates.

An integral part of the new system is the Heil dryer. A stream of hot air carries the fluffed pulp through the dryer . . . fine fibers are quickly dried and carried away, while wetter, heavier fibers move more slowly for longer exposure to the drying medium. Result: uniform drying of all fibers.

Compound showering flights on each of the three drums eliminate surging and provide maximum utilization of the drying medium.

For descriptive literature on the new Dry-Bale system and the Heil dryer, write The Heil Co. or Bauer Bros. Co., Dept. H, Springfield, Ohio.

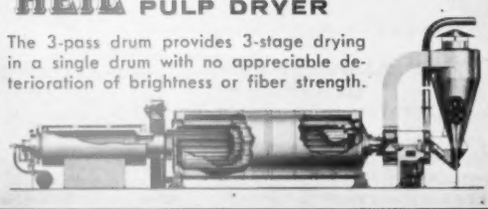
THE HEIL CO.

(Manufacturers of the Arnold Dryer)

3000 W. Montana St., Milwaukee 1, Wisconsin

HEIL PULP DRYER

The 3-pass drum provides 3-stage drying in a single drum with no appreciable deterioration of brightness or fiber strength.



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The high degree of chemical, mechanical and physical control over materials and operations in the Chemipulp and Chemipulp-KC systems results in maximum plant output, high pulp quality and low operating costs.

- Circulating Systems
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- Waste-Liquor SO_2 Gas and Heat Recovery
- Independent Recovery System
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- Hydroheater
- Spray-Type SO_2 Gas Cooling System
- Acid System (Bubble Absorption)

Chemipulp Process, Inc.
Watertown, N. Y.

Associated with

Chemipulp Process, Ltd., 253 Ontario St., Kingston, Ont.

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Pacific Coast Representative

A. H. Lundberg Inc., P.O. Box 186, Mercer Island, Wash.

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MODEL **300** EXTRA HEAVY DUTY KNIFE GRINDER

with HYDRAULIC DRIVE

SIZES:
78" to 240"
CAPACITY.

Other Standard Equipment includes Heavy Duty Precision Ball Bearing Spindle, 26" Segmental Grinding Wheel, 25 HP TEFC Motor, Automatic Force Feed Oiler, 8" x 8" Swiveling Knife Bar, Wet Grinding and Precision Wheel Dresser. Write for complete information. Other Models available.

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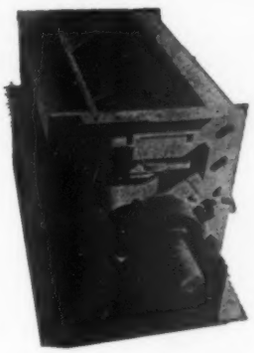

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Four difficult problems for the paper industry

- Grinds any kind of bark and billets, wet or dry.
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- For groundwood mills—grinds bull screen rejects in one pass, small enough for feeding into machines for final refining into pulp.
- Grinds groundwood pulp laps for complete drying to save 40% of freight bills.

West Coast Representative—Sumner Iron Works, Everett, Wash.
Canadian Representative—Canadian Sumner Iron Works, Vancouver, B.C.

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Speaking of Pulpwood

Did you know there is an Owen Grapple especially designed for the pulp and paper manufacturing field? The independent tine action . . . an exclusive Owen patent . . . affords greater grabs and larger log loads.

Write today and get convincing facts and special illustrated pulpwood bulletin . . . free upon request.

The OWEN BUCKET Co.
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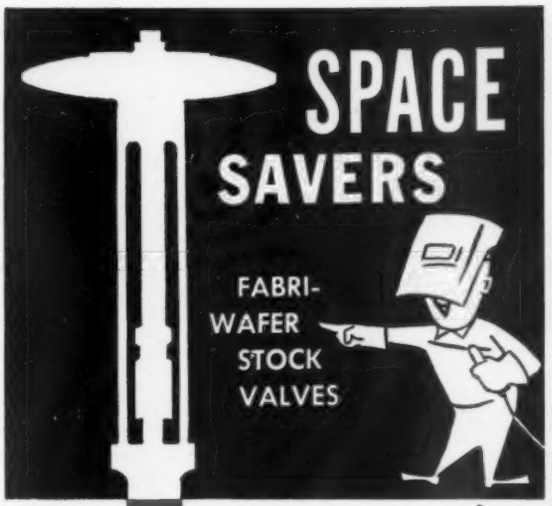
Southern Corporation, Charleston, S.C.



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Only FABRI-VALVE Gives you all these FEATURES!

- Inverted Packing Gland to assure perfect gate alignment (patented).
- Many alloy combinations to combat corrosion EFFECTIVELY.
- Optional O-Ring Seating.
- Surface ground gates for smooth, easy operation.
- Pre-formed, SELF LUBRICATING rubber packing for minimum maintenance.

and many more advantages . . .

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INDIGESTION
ABOVE YOUR
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The positive displacement action of Pneu-Bin pulsating panels, strategically located in your wood chip bins, is the most effective cure. Can be installed in any kind of bin—wood, steel or concrete.

Write for FREE literature and "Flow Stoppage Report." PneuBin engineers will make recommendations without obligation on your part.

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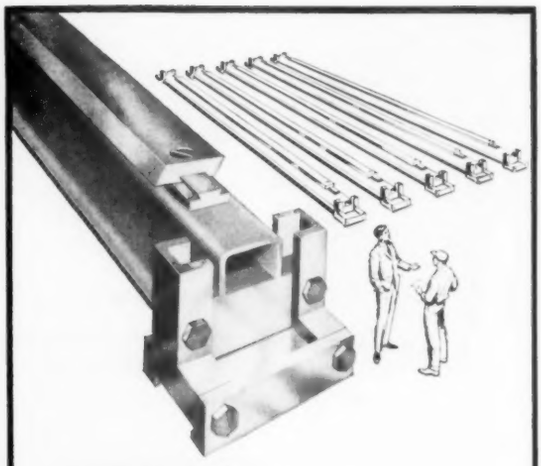
DIVISION OF GEROTOR MAY CORPORATION
COCKEYSVILLE, MARYLAND



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Ralph E. Ingram

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3121 S.W. Moody Avenue,
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PAPER CHEMIST WANTED

Paper chemist experienced in formulation for specialty writing and printing papers to customer specification. Must be familiar all commercial sizing, loading materials and dyestuff. Color control most important. Small mill, modern laboratory, good working conditions, west coast. Salary open negotiation. Write to Box P-255, PULP & PAPER, 370 Lexington Ave., New York 17, N. Y.

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NIGHT PAPER MILL SUPT.

To rotate 4-12 and 12-8. Three machine mill in middle Atlantic area producing book specialty papers. Must have supervisory experience. Excellent opportunity. Send resume and salary required to Box P-247, PULP & PAPER, 370 Lexington Ave., New York 17, N. Y.

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Unusually fine opportunity for a technically qualified salesman who has sold to paper mills or who has had paper mill experience.

The man selected for this position must be able to apply his knowledge of paper making and coating to the sale of specialty starches for all such applications.

The position holds excellent promise for advancement with a progressive company in an expanding program.

Salary open—based on experience and education.

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SOUTHERN ENGINEERING ORGANIZATION

seeks a man interested in the development of a pulp and paper mill design department. Excellent opportunity for an engineer of proven technical and sales ability, preferably with about ten years mill experience and contacts in pulp and paper field. Write Box P-251, PULP & PAPER, 370 Lexington Ave., New York 17, N. Y.

FOR SALE

Two horizontal, rotary digesters, 8' 6" x 9' 6½" with a 450 cubic foot volume, complete with bearings, drive gears and splashproof motors. Digesters lined with Type 317 stainless steel alloy, and suitable for a working pressure of 250# psi at a temperature of 390° F. Detailed foundation drawings are available.

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$5,000 to $50,000

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Finding and landing **THE ONE BEST JOB** requires sound analysis, careful planning, proper contacts and skillful negotiation.

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If you seek to better yourself, and your performance to date entitles you to our endorsement, we can and will help you. Contact us in absolute confidence for information regarding procedure.

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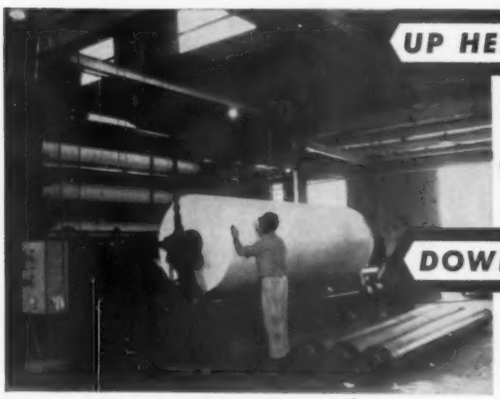

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The Last Word PULP & PAPER Editors' Page

Thanks, New Zealand

From way "Down Under" in New Zealand come some very kind words for PULP & PAPER's WORLD REVIEW NUMBER, which is due to be published again in July—the 1960 issue.

We thank the writer who signs himself "The Rambler," for his remarks as published in what is a very fine contemporary, the New Zealand Timber Journal.

The Rambler says that PULP & PAPER's annual REVIEW NUMBER is "refreshing reading to the paper man who spends so much of his time immersed in his own business" because it "ranges over the entire world in a survey of our industry."

He was very interested in PULP & PAPER's articles on Russia, which resulted from a tour of that country by the editor last year. Three articles on Russia and three on other European countries and their pulp and paper industries, incidentally, just recently won for our editor the much coveted Jesse H. Neal first prize award for "editorial achievement." (On page 58 of this issue is the story of the winning of the Neal first prize by Editor Al Wilson in a nationwide competition. The judges, incidentally, chose winners on the basis of "greatest service to readers.")

In mentioning the annual WORLD REVIEW NUMBER, the Rambler wrote that it is "crammed with past statistics and future estimates."

Busy Days—World Review Coming

Incidentally, the worldwide gathering of statistics and reports for the new WORLD REVIEW NUMBER is working up to a climax in our offices around the country right now. Everyone on the staff is about at his busiest peak for anytime of the year. Reports for the WORLD REVIEW are flowing in from authoritative editors serving in over 50 countries.

This is the only publication of its kind—and the first to reach readers all around the globe with complete worldwide information on 1959 production, consumption, exports, imports, etc., as well as valuable information on 1960 trends. It is a truly tremendous editorial production.

Editorial Awards for PULP & PAPER

While we are speaking of editorial awards this WORLD REVIEW NUMBER has itself been a prize winner, too. It won "the Award of Merit for Editorial Excellence in Industrial Papers" in a competition conducted by the magazine Industrial Marketing, an outstanding trade publication for business and industrial magazines.

Since there are more than 2,300 business, professional and industrial magazines in the United States, the PULP & PAPER staff is rather proud that in recent years it has won not only one but two very much coveted prizes for editorial excellence and readers' service: First the Industrial Marketing Award of Merit, and now, the Associated Business Publications First Prize.

Besides these awards, PULP & PAPER articles several times have been chosen in a national competition by judges for the honor of reproduction in the annual Graphic Arts Progress report sponsored by Fraser Paper, Ltd. PULP & PAPER articles also have won two "public service" awards from the National Safety Council.

What It Really Means

The real meaning of all this is "service to our readers." Publishing is simply a service enterprise. That's the watchword of PULP & PAPER's editors, and always will be. If we win prizes and awards in performing our services, we will be very happy about it, but we will just keep on with more and better service.

There is no reason for the existence of any publication if it is not a genuine service.

Where Is Europe Headed?

The dreams of many of the leading personalities in Europe who helped to found the Common Market (France, Italy, W. Germany, Holland, Belgium and Luxembourg), and those whose countries have just completed ratification of the new European Free Trade Association (the "Outer Seven" European countries) are in great danger of being blasted into destruction. The reason is that the two groups are moving in opposite directions instead of finding at least some ways of working more harmoniously.

The ideal situation for Europe is for the Outer Seven and Inner Six to find some common ground for cooperation. In the best interests of Europe as a whole, this is most desirable. And it is to be hoped that negotiations toward this end, now under way, will lead to success.

Britain itself faces a serious dilemma. It declined membership in 1958 in the Inner Common Market. It has been instrumental in forming the Outer Seven, which just took shape officially when Sweden finally ratified the agreement. British paper makers are worried that Swedish paper products will now come in to Britain in more quantities and possibly lower prices and play havoc with British paper products. The British paper industry failed in efforts to influence its government against the EFTA. Other industries of Britain were strongly in favor of the Outer Seven pact, and the paper industry stood almost alone in opposition, among big industries.

The way things are going, Britain also has a very serious problem in trying to decide whether its own preferential trade agreements with its British Commonwealth "brothers" are really as important to British prosperity as the Inner Six and Outer Seven markets. Meanwhile, there is increasing competition for British industries from its own Commonwealth associate countries.

The United States also has reason to watch Europe and to keep negotiating with the European trade groups. The American paper industry has warned the State Department that there is possible danger of discrimination against American paper, and other American products for that matter, behind the new European trade "walls." This, of course, is also true of Canada and, in particular, its paper industry.

It is to be hoped that the broad views will prevail and that all the nations concerned will recognize the vital importance of good economic relations (which mean economic strength and security) among all the European countries, and between these countries and the U.S.A. and Canada.

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